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AUGUST, 1878.

NOTE ON THE RESIN OF PODOPHYLLUM.

By Frederick B. Power.

Since the publication of my paper on the resin of podophyllum,[1] at which time attention was called to the possible pre-existence of protocatechuic acid in the rhizome, an opportunity has been extended for pursuing the investigation in this direction. The material worked upon, prepared in the laboratory of Dr. E. R. Squibb, was very kindly sent by him to Prof. Flückiger, who was so kind as to place it at my disposal. It consisted of the washed and dried precipitate produced by lead acetate in the mother liquors obtained in the preparation of podophyllum resin from 400 pounds of powdered rhizome, and this, as stated by Dr. Squibb, was a portion of a lot of 1,000 pounds of rhizome, all practically the same in quality. For complete precipitation, twelve pounds, avoirdupois, of crystallized lead acetate were employed, the washed and dried precipitate therefrom weighing about ten ounces.

This lead precipitate, consisting of the lead compound of the acid resin associated with a small amount of lead chloride, was finely powdered, suspended in water, and saturated with hydrosulphuric acid, the liquid filtered to separate the lead sulphide, which latter was again suspended in water and treated as before, in order to insure the complete removal of the lead. The lead sulphide was then dried, and exhausted with boiling alcohol. The amount of acid resin as obtained by the evaporation of the aqueous liquid upon the water-bath was 60 grams. By the evaporation of the alcoholic solution, obtained by the subsequent exhaustion of the lead sulphide, 40 grams of resin were obtained; the resin being so much more sparingly soluble in water than in alcohol that the extraction of the entire amount produced by the decomposition of the lead compound would have required repeated

[1] "Proc. Am. Pharm. Assoc.," 1877. pp. 420–433.

treatment with large amounts of water. The acid resin was then further examined, as detailed in my previous paper,[1] by exhaustion with ether, and treating the portion soluble therein (which should contain the protocatechuic acid if present, associated with resin) with boiling water. The final product, thus obtained, consisted chiefly of amorphous resin, and all efforts to isolate a crystalline compound therefrom, which would admit of a more minute examination, were unsuccessful. Although the peculiar character of the resin in being soluble in water presents a great barrier for a thorough separation and examination of its constituents, yet from the amount of material operated upon, and without reliance alone upon color tests, the conclusion must be drawn that protocatechuic acid can as yet only be obtained as a decomposition product, and its pre-existence in any drug must still remain a subject for future observation and discovery.

In the course of this investigation notice was also again taken of the statement of Prof. Mayer, made some years ago,[2] in regard to the presence of a colorless alkaloid in the rhizome, which may be precipitated by lead or by acids. That such an alkaloid exists, which is precipitated by lead salts, seems quite improbable, and the results of the present investigation have also failed to indicate its presence; in this respect but more fully confirming the results of my previous investigation. That the alkaloid Berberina is absent, the writer believes to have quite conclusively proven, and may be supported by the observation of Dr. E. R. Squibb, who has more recently subjected a liter of the filtered liquid, obtained by the precipitation of the resin, to the action of Mayer's solution of mercurio-potassic iodide, but with *negative* results. It may not be inopportune, in this connection, to call attention to the fact which, if generally known, is not always considered, that Mayer's solution of mercurio-potassic iodide, as well as other commonly-employed alkaloidal reagents, produce precipitates with many other substances beside alkaloids, which may possibly have led other investigators astray in assuming the presence of an alkaloid in the rhizome of podophyllum.

In view of this fact, we can only be justified in assuming such reactions as simply indicative, but by no means as furnishing conclusive evidence of the presence of an alkaloid: the latter only to be established by its isolation and identification.

[1] *Ibid.*

[2] "Amer. Jour. Pharm.," March, 1863, vol. xxxv, p. 98.

ASSAY OF COMMERCIAL EXTRACTS AND RESINS OF JALAP.

By Chas. D. Farwell, Ph.G.

(*From an Inaugural Essay.*)

The examination of a few commercial extracts and resins of jalap, for the purpose of comparing them in regard to purity and the relative amount of medicinally active constituents contained therein, was conducted in the following manner:

One gram of each extract was dried over sulphuric acid and weighed, to ascertain the amount of moisture present. Ten grams of each extract were exhausted by water, and the residual resins, after being dried and weighed, were treated with stronger ether to separate the soft from the hard portion. The etherial solutions, being allowed to evaporate, yielded the *soft resins*, which were weighed and dissolved in officinal solution of potassa, forming clear, deep reddish-brown solutions, the color probably being due to the action of the alkali on a peculiar coloring principle. When dilute hydrochloric acid in excess was added to these alkaline solutions, either hot or cold, dense light-colored precipitates were thrown down. In this respect the soft resin of jalap differs decidedly from the resin of scammony, with which some chemists have claimed it to be identical. Resin of scammony is wholly soluble in ether and officinal solution of potassa, but is *not* precipitated from its alkaline solution upon the addition of dilute hydrochloric acid in excess.

The *hard resins*—convolvulin of Mayer—were also weighed and dissolved in officinal solution of potassa. When dilute hydrochloric acid in excess was added to these solutions, either hot or cold, no precipitate was occasioned, the convolvulin having been converted by assumption of water into soluble convolvulinic acid.

The aqueous solutions from the extracts were evaporated, and the residues, after being weighed, were exhausted by stronger alcohol to ascertain the amount in each soluble in both alcohol and water.

In examining the commercial resins, one gram of each was dried, weighed, exhausted by water and again dried and weighed, to ascertain the amount of moisture and extractive matter present. One gram of each, previously exhausted by water and dried, was treated with stronger ether to separate the hard and soft resins. These, after being weighed, were treated with officinal solution of potassa and dilute hydrochloric

acid, in the same manner as the resins from the extracts, and with like results.

To insure correctness, each of the operations were repeated with fresh portions of the preparations. The quantitative results are given in the following tables, samples from the different manufacturers being designated by numbers, as follows: No. 1 being from a New York manufacturer, while 2, 3 and 4 were made by different firms in Philadelphia. Resin No. 4 was made by myself by the process of the U. S. Pharmacopœia.

EXTRACTS contained	1	2	3	4
	per cent.	per cent.	per cent.	per cent.
Water,	7·5	13·0	13·4	11·7
Resin,	24·0	24·5	18·7	16·3
Soluble in water,	68·5	62·5	67·9	72·0
Soluble in both alcohol and water,	26·0	27·0	24·0	19·0
Resins from Extracts soluble in ether,	8·5	10·8	16·3	14·7
" " " insoluble "	91·5	89·2	83·7	85·3

RESINS	1	2	3	4
Water,	3·0	4·0	3·5	
Soluble in water,	trace	trace	2·3	
Soluble in ether,	6·5	9 0	9·7	5·3
Insoluble in ether,	93·5	91·0	90·3	94·7

The behavior of the resins when separated by ether and treated with solution of potassa and dilute hydrochloric acid was considered sufficient proof of purity, the difference in the proportion of the active constituents being, no doubt, mainly due to the quality of the drug used, and perhaps in part to the manner of preparation. It will be seen by the foregoing tables that this difference consists chiefly in the relative proportion of the resin contained in the extracts, and it is, of course, upon the resin that the activity of the extracts *chiefly* depends, although the portion soluble in both alcohol and water has been proven to be pos-

sessed of valuable mild cathartic and diuretic properties. Only one of the commercial resins contained matter soluble in water, and this was found to be principally sugar.

Although neither of the preparations examined may be considered poor, and *fair* results might be attained from the employment of any one of them medicinally, the use of inferior drugs or improper manipulation by the manufacturer to *any* extent should not be encouraged, nor should the pharmacist be satisfied with even a good preparation when there is a better or a best.

There is no doubt that what is true of so many of the preparations usually purchased from the manufacturer is also true of the extract and resin in jalap: this is, that the pharmacist, by the use of proper care in selecting the drug, can himself produce a preparation fully equal, if not superior, to the best from the manufacturer.

BERBERIS NERVOSA, Pursh.

By Peter F. Neppach, Ph.G.

(*Abstract from an Inaugural Essay.*)

This is the *Mahonia glumacea* of De Candolle, known in Oregon as *Oregon Grape*, and is indigenous to California, Oregon and Washington Territory, principally in the Coast Range and Cascade Mountains, from Vancouver Island to the Bay of Monterey. The part used in medicine is the rhizome, which is horizontal in the ground, very knotty and crooked, from the size of a quill to an inch in diameter, and has a very thin bark of a dingy yellowish-brown color externally, somewhat lighter internally, and covering a white tough wood. It is regarded as possessing tonic and febrifuge properties and has been used in syphilitic complaints with asserted success.

The whole rhizome was crushed to a coarse powder, macerated with alcohol, the tincture concentrated, thrown into water and filtered from the yellow resinous precipitate; the filtrate was somewhat concentrated and well acidulated with hydrochloric acid, when a bright-yellow powder was obtained, the warm alcoholic solution of which, treated with a dilute solution of iodine in iodide of potassium—being careful to avoid excess of iodine—gave a bronze-green precipitate. The yellow powder was compared with hydrochlorate of berberina, pre-

pared from hydrastis, in its behavior to various reagents; the reactions being identical, proved the identity of the substance with berberina.

On examining the yellow precipitate occasioned in the concentrated tincture by water, it was found to contain more berberina, and possibly another alkaloid, which, however, was not isolated.

The powdered rhizome, previously exhausted with strong alcohol, was treated with water. The infusion, on being tested with the usual reagents for alkaloids, gave no reaction; it contained, however, gum and sugar.

ON the SPECIES of BERBERIS of the PACIFIC COAST.

By John M. Maisch.

The genus Berberis comprises shrubs, which have a more or less yellow wood and a yellow inner bark, and produce racemes of yellow or yellowish flowers, and several-seeded acidulous berries. As at present constituted, about 50 species are known which belong to both continents, but are largely South American. One species, *Berb. vulgaris*, Lin., is indigenous to Europe, has been naturalized in New England and grows spontaneously in other parts of the United States. It has the early leaves reduced to sharp, usually triple spines, from the axils of which deciduous, obovate, spatulate, bristly, serrutate leaves without pointed petioles, are produced. The shrub grows 6 to 8 feet high, while the only species indigenous to the eastern section of the United States is but 1 to 3 feet high. This is the *Berb. canadensis*, Pursh, which, however, according to Gray, is not indigenous to Canada, but grows in the Alleghanies of Virginia and southward; it has repandly-toothed leaves and few-flowered racemes.

A larger number of species are found in the Western United States, in the territory bordering the Pacific. All of them are, however, very different in aspect from those noticed above, the differences having been considered so important that the plants were arranged by Nuttall into a separate genus, *Mahonia*, which was also adopted by De Candolle, but has more recently been regarded merely as a sub-genus of *Berberis*, from which it is distinguished by evergreen oddly pinnate leaves with sessile spinulously-toothed leaflets, by the absence of glandular spots at the base of the petals and by the presence of a tooth on each side of the apex of the filament. While the berries of the species noticed above are of a bright-red or scarlet color and oblong or

BERBERIS REPENS, ***Lindley.***

Leaf, one-half of natural size. Leaflet, natural size.

oval in shape, the species of our Pacific coast have globular dark-blue berries. On that account it seems they are indiscriminately called *Oregon grape;* it will at least be observed from the statements below, that Pursh included *Berb. repens* in his *Berb. aquifolium*, to which, it is asserted, the name of Oregon grape is usually given, and Mr. Neppach informed us that the plant analyzed by him (see page 373) is known by the same name in those parts of Oregon where it grows. All the species resemble one another so closely, and they all vary in aspect to such an extent, that it will be very difficult for others than botanists to distinguish them. It appears also that these plants have been used indiscriminately on the Pacific coast for many years, and it is not unlikely, that they are indiscriminately collected and used as *Berberis aquifolium.*

As indigenous medicinal agents, they certainly deserve the attention of physicians; but we doubt that they will be found to possess greater efficacy or markedly different properties than the numerous drugs which contain notable quantities of berberina.

Excellent descriptions of these plants are contained in a work recently published under the title: "Geological Survey of California. Botany, vol. i, Polypetalæ: by W. H. Brewer and Sereno Watson. Gamopetalæ: by Asa Gray." With the annexed plate of *Berb. repens*, Lindl., for the use of which we are indebted to Mr. C. G. Lloyd of Cincinnati, we publish the descriptions of all the California species, and merely remark, as to the venation, that the *pinnate* venation is well marked in the plate, and that the leaflets of *Berb. nervosa* before us have, aside from their different shape, one or two veins on each side of the mid-rib originating at the very base thereof. The leaflets of *Berb. aquifolium* differ from those figured in being narrowed towards the apex.

Leaflets Pinnately Veined.

Berberis repens, *Lindl.*—A low, somewhat procumbent shrub, less than a foot high; leaflets 3 to 7, ovate, acute, not acuminate, 1 to 2½ inches long, not shiny above; racemes few, terminating the stems, 1 to 1½ inch long. *B. aquifolium*, Pursh, mainly and of numerous authors. Throughout California, and extending northward to British Columbia and eastward to Colorado and New Mexico.

B. aquifolium, *Pursh.*—A shrub 2 to 6 feet high, leaflets usually 7, but often more, the lower pair distant from the stem, ovate to oblong-lanceolate, 1½ to 4 inches long, acuminate, green and shining

above, sinuately dentate with numerous spinose teeth; racemes 1½ to 2 inches long, clustered chiefly in the subterminal axils; fruit nearly globose.

Frequent in Oregon and northward, where it is known as the "Oregon grape," and reported southward in the coast ranges even to Monterey. Pursh's description and figure belong mainly to *B. repens.*

B. pinnata, *Lag.*—Very much like the last species, but the leaves more crowded and more nearly sessile, the lower pair of leaflets being approximate to the base of the petiole; leaflets usually 5 to 7; racemes more frequently lateral upon the branches; fruit oblong, ovoid, 4 lines long. *Mahonia fascicularis*, D. C.

Hills about San Francisco Bay and eastward to San Diego, thence east to New Mexico. Fruit pleasant to the taste and known to the Mexicans as Leña amarilla. There has always been much confusion, and is still some uncertainty respecting this species and its allies. Lagasca's original description (published in 1803) professedly included specimens both from Monterey and from Vancouver Island, while the plant cultivated in the gardens from his seeds, and figured under this name, appears to have been wholly the Oregon form, which Pursh afterwards included with the low *B. repens*, in his description and figure of *B. aquifolium.* Humboldt and Bonpland afterwards applied the name *B. pinnata* to a Mexican plant, figured by them, and DeCandolle at length included all, the Mexican, Californian and Oregon together, under the name *Mahonia fascicularis.* The question of synonymy is most conveniently solved by retaining what has become the ordinary application of the names, *B. fascicularis* being limited to the Mexican species, which seems distinguishable from the Californian *B. pinnata* by its more numerous, more acuminative and less shining leaflets.

Leaflets Palmately Nerved.

B. nervosa, *Pursh.*—Stems simple, but a few inches high; petioles and peduncles springing from the apex, accompanied by dry glumaceous rigidly acuminate bracts; leaves 1 to 2 feet long, of 11 to 17 ovate acuminate leaflets; racemes elongated; pedicels short; fruit larger than in the preceding species, 3 to 4 lines in diameter. *Mahonia glumacea*, D. C.

Near the coast from Monterey to Vancouver Island.

ON THE VOLATILITY OF GLYCERIN.

CINCINNATI, June 27th, 1878.

To the Editor American Journal of Pharmacy:

In Dr. Squibb's article on "fluid extracts by repercolation," published in the May number of the "Journal," he states that on evaporating to constant weight a mixture of glycerin, alcohol and water,

containing 20 per cent. by weight of glycerin, only 16 per cent. of residue was obtained, showing that 20 per cent. of the glycerin in the mixture had been carried off with the vapor of the alcohol and water. This result seemed so at variance with the recognized non-volatile character of glycerin that the following experiments were made to test it, the results of which do not at all accord with Dr. Squibb's theory.

A mixture of glycerin, water and alcohol was made in the same proportions used by Dr. Squibb. The glycerin was taken from a five pound can opened expressly for the purpose, and tested by exposing a carefully weighed quantity to the heat of a water bath, for 30 minutes, during which time it lost no appreciable weight, showing that it lost no water at this temperature. In this, as in the other experiments, the liquid was weighed in a tared watch glass set in a second one, the two being used to avoid loss from "creeping" of the liquid over the edge of the glass. They were then set, together, in a large porcelain dish, heated over boiling water and covered. The temperature of this "air bath" was shown to be 170° to 180°F., by a chemical thermometer. Each evaporation was carried to constant weight. The glycerin mixture, containing 20 per cent. of glycerin, was kept in a well stopped bottle to avoid concentrations by evaporation of the alcohol.

Four experiments gave residues weighing in per cents. as follows: 20·1, 20·5, 20·3, 20·6; mean result, 20·4 per cent. The 0·4 per cent. excess is due to the rapid evaporation of the alcohol during mixing and weighing, thus concentrating the solution of glycerin.

Two experiments were made with a mixture of strong alcohol and glycerin, with 30·8 per cent. of the latter; the residue weighed 31·0, 31·5; mean, 31·3 per cent. Excess slightly greater than before.

Glycerin 16·7 per cent., water 83·3 per cent. gave, under the same treatment, residues weighing 16·5 and 16·5 per cent.

These results show no loss of glycerin whatever; the results obtained by Dr. Squibb must have been due to some cause other than the volatility of glycerin in the presence of alcohol and at atmospheric pressure.

NAT. W. LORD, E.M.,
Analytical Chemist.

A NEW DEVICE FOR MOULDING SUPPOSITORIES.

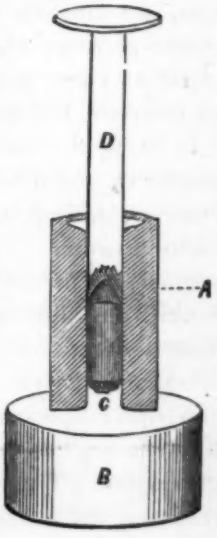
By Emlen Painter, Ph.G.

(*Read at a Meeting of the California Pharmaceutical Society, May* 29, 1878.)

It is not my intention to write an elaborate essay on the best mode of preparing suppositories, but simply to describe a little device for readily moulding the material in a convenient form, and doing it quickly and well. Although so much has been written on the subject of suppositories within the past few years, and various are the moulds to be found in the market, no contrivance for moulding them has yet been devised that seems to have met with universal favor, either from the high price at which some of the machines are held, their inefficiency or a lack of dexterity on the part of the operator.

Many pharmacists do not meet with satisfactory results in the process of melting the cacao butter and casting the material in moulds—their own fault, no doubt, for not knowing better how to do it. At best, however, it is rather a tedious and troublesome process, and in the hands of unskilled assistants, the numerous difficulties that are continually met with offer a serious objection: as for instance, sticking to the moulds; varying in size, or making ten or eleven where there ought to be twelve; and perhaps the last one cast has one-quarter of the medicament that ought to be in the dozen; and also the long time required in preparing them, besides other minor objections.

The plan of shaping the suppositories with the fingers (the one most generally adopted, perhaps) has its objections as well, but in my opinion not so important nor numerous as the objections to the melting process. The principal ones are their varying in shape, their unfinished appearance and the long time required, if pains are taken, to shape them very nicely. The lacking in uniformity is sometimes particularly noted by the patient, if the suppositories chance to be prepared a second time by a different person from the one who originally put up the prescription.



Now all the objections above noted, including that of an expensive machine, seem to be obviated by this device. It is made on the principle of Remington's pill machine for making compressed

pills—"Proc. Am. Phar. As.," 1875; "Am. Jour. Phar.," March, 1876—consisting of a cylinder, A, (as shown in the accompanying cut), 1⅛ inch in diameter, by 2 inches in length, with a central bore or space, ⅜ of an inch in diameter, rounded off a little at either end of the cylinder. This cylinder rests upon a cylindrical stand, B, 2 inches in diameter, by 1 inch in height, in the centre of the upper surface of which has been made a cylindrical spur, C, ⅜ of an inch in height, with the upper end made slightly concave, and of such a diameter that it will nicely fit the bore of the cylinder first described. A rod, D, 2½ inches long, is made of the same diameter as the spur, with a conically concave depression, ⅜ of an inch deep, turned in one end and leaving it with a sharp edge. On the other end of the rod is made or fixed a knob that will stand a sharp blow of a mallet—the pressure of the hand I find sufficient, however, unless the suppository is made unusually long.

The machine is intended to be made of metal; brass, nickel-plated, would, perhaps, be the best. If simply made of brass, the first of a lot of suppositories made will invariably be discolored from the mould becoming tarnished, no matter what pains are taken in cleaning it.

A thin coating of silver answers quite well the purpose of protecting it, which may be given in a few minutes' time, by simply taking a solution of nitrate of silver in the proportion of twenty grains to the half ounce, and adding to this a strong solution of cyanide of potassium, just sufficient to redissolve the precipitate first formed, then add a little prepared chalk and rub the brass with this mixture. In the course of a few minutes you will have it well coated with a thin coating of silver, polished and ready for use.

In using this mould the cacao butter must first be well powdered, which can readily be done by first breaking down the larger lumps in a mortar, then adding a few drops of alcohol, and triturating until it is finally powdered. (I am indebted to Mr. G. G. Burnett for this suggestion.) The use of the alcohol is to prevent the particles of cacao butter from adhering together by the pressure and heat produced in the process of trituration, and it will be found to greatly facilitate the operation. By the time this is made fine enough, the alcohol will be nearly all evaporated. Then add the medicinal agent, and form the whole into a mass, as would be done to shape the suppositories with the fingers. The mass can always be made in this climate, without rendering the material too soft, by adding a few drops of a fixed oil,

and it is surprising the quantity of oil that can be added without perceptibly effecting the consistence or the melting point of the finished suppository. After the mass is made it can be conveniently divided into the required number of pieces, on the ordinary pill machine, by making a cylinder of it the required length (as would be done in making pills), and pressing it firmly between the divisions instead of rolling it, then separate with a spatula the several divisions made. The mass should be rolled in powdered elm or lycopodium, to prevent it from adhering to the pill machine. The next step in the process is to place the hollow cylinder of the mould in its position on the stand, drop in one of the pieces, and press it very firmly with the rod, which must be turned back and forth a few times to enable one to readily detach the suppository after it has been pushed out, then lift the upper cylinder, twisting it in the act, and push the suppository through with the rod, and it is finished.

Suppositories of any required size, between ten and thirty-five grains, can be well moulded in a machine of this size. And the cost of such a machine made to order, of brass, will not exceed three dollars; at least, that was the cost of the first one I had made (including patterns and everything) from a rough sketch made by myself. The second one made did not cost quite so much.

The same principle is also admirably adapted to making pessaries by modifying the size and shape of the mould.

GLEANINGS FROM THE GERMAN JOURNALS.

By Louis von Cotzhausen, Ph.G.

New, Convenient and Cheap Dialyzer.—Huizinga, in Groningen, recommends to make rectangular bags of moist parchment paper, fastened together with a paste consisting of a warm 15 per cent. gelatin solution, containing 3 to 5 per cent. of chromate of potassium. The dialyzers are dried and exposed to the sunlight, fastened over hard rubber frames, and tested by filling them with water. Several such bags may be suspended in one vessel, care being taken to remove the water from the bottom of the vessel with a siphon, and to continually supply fresh water above. Egg albumen, neutralized with muriatic acid, lost its soluble mineral salts in such dialyzers in the course of 24 hours, while at the expiration of 36 hours it was identical with

Schmidt's Dialyzed Albumen, no longer coagulating when heated nor causing a reaction with metallic salts.—*Phar. Post*, May 16, p. 156.

Small Ice Apparatus.—Prof. Reichardt recommends a small apparatus made of strong sheet iron, by means of which 250 to 300 grams of solid, transparent ice can be frozen in 5 or 10 minutes, in hot summer, at a trifling expense. The apparatus consists of two cylinders, the inner one of which is filled with water of 10 to 20°C., and rotates in the outer one, which contains a frigorific mixture, consisting of 1 kilo of powdered ammonium-nitrate and 1 liter of water. The ice can be easily removed from the inner vessel after dipping the latter into hot water, while the ammonium-nitrate can be regained in a pure state by filtering and evaporating to dryness.—*Archiv d. Phar.*, May, 1878, p. 446.

Determination of Fat and Water in Milk.—W. C. Heraeus uses a short and reliable process, which is as follows: A shallow silver dish, 8 cm. long, 2 cm. wide, and 1 cm. deep, containing a little glass and 10 grams of milk, is placed into an iron gas-pipe, which is connected either with a good chimney or with a Bunsen suction-tube; another pipe containing burned lime is attached, and air heated to 35° C. is passed over the lime and through the pipe containing the milk; the latter will be dry in the course of half an hour. The difference in weight indicates the water, and light petroleum benzin extracts from the residue the fat.—*Archiv d. Phar.*, May, 1878, p. 443.

Hydrochlorate of pilocarpina is recommended as a valuable substitute for the more expensive physostigmia salt. It is in white crystals, and forms a double salt with platinum, crystallizing handsomely. It is also frequently preferred to eserina as a myotic, and when injected hypodermically is considered a never-failing diaphoretic, having, however, sometimes very unpleasant emetic effects, and always increasing saliva secretion.—*Phar. Post*, May, 1878, p. 156, from *Gehe's Ber.*

Phloroglucin, a substance existing in various combinations in the vegetable kingdom, was discovered by Wiesner to be a very delicate reagent for ligneous tissue. One drop of a solution containing $\frac{1}{2}$ per cent. of it will cause a beautiful bright red coloration on a piece of pine wood on the addition of a drop of hydrochloric acid.—*Chem. Centralbl.*, May 15, from *Polyt. Jour.*

The Glucoside of Rhamnus infectorius (*French Berries*).—Liebermann and Hörmann exhaust the powdered berries by boiling 90 per cent. alcohol, decanted from a brown resinous glucoside, and collected the light yellow masses of *Xanthorhamnin*, of which more was obtained by concentrating the alcoholic mother-liquor. 3 kilos of the berries yielded about 185 grams of resinous glucoside and 183 grams of pure xanthorhamnin, which was found to be identical with Schuetzenberger's *Rhamnegin*, very soluble in cold water, soluble in alcohol, but insoluble in benzol, ether and chloroform; it crystallizes from alcohol in light yellow microscopic needles.—*Ber. Deutsch. Chem. Ges.*, May, 1878, p. 952.

Action of Reducing-Agents on the Product obtained by treating Brucia with Nitric Acid.—R. Roehre dissolved 1 part of brucia in 25 parts of nitric acid, spec. grav. 1·4, and allowed the red solution to stand until it turned yellow. On adding stannous chloride in excess the color changed to a beautiful dark violet, which soon became dark red, and finally colorless after slowly separating violet crystals. These are soluble in water and mineral acids with a violet, but in nitric acid with a yellow and in potassa with a greenish-yellow color, sparingly soluble in alcohol and insoluble in ether, benzol, petroleum-ether, bisulphide of carbon and amylic alcohol.

The solution of brucia in nitric acid yields with sulphide of ammonium beautiful brick-red shining needles, which are soluble in hot water and in the mineral acids with a red and in caustic potassa with a blue color.

If sulphurous acid is used in the place of stannous chloride or ammonium-sulphide, violet crystals will form, while sulphuretted hydrogen causes a light violet precipitate.—*Ber. Deutsch. Chem. Ges.*, April, 1878, p. 741.

Bixin, $C_{28}H_{34}O_5$, the coloring principle of arnotta, the pulp surrounding the seeds of Bixa orellana, *Lin.*, was obtained by C. Etti in dark red four-cornered crystalline plates, of a metallic lustre, which melt at 175°C. Bixin is insoluble in water, sparingly soluble in ether, alcohol, benzol, bisulphide of carbon and glacial acetic acid, more soluble in chloroform and boiling alcohol; it unites with alkalies to soluble compounds in water, reduces Fehling's solution and yields with permanganates mainly oxalic acid. It is prepared as follows: 1·5 kilo

of arnotta is digested at 80°C. with 2·5 kilos of 80 per cent. alcohol and 150 grams of calcined soda; carbonic acid gas is generated, the mixture turns brown, and the coloring principles are dissolved. The solution is filtered while warm, the residue expressed and again extracted with 1·5 kilo of 60 per cent. alcohol; the combined filtrates are mixed with half their bulk of water, and completely precipitated by a concentrated solution of soda. The precipitate is purified by recrystallizing from 60 per cent. alcohol and treatment with water and soda as before, and afterwards decomposed by hydrochloric acid in the presence of diluted alcohol.—*Ber. Deutsch. Chem. Ges.*, May, 1878, p. 864.

GLEANINGS FROM THE FRENCH JOURNALS.

BY THE EDITOR.

Drosera rotundifolia, *Lin.*, has been analyzed by G. Lugan. The fresh plant was treated by diethéralysis, the process recommended by Legrip ("Am. Jour. Phar.," 1876, p. 235). The aqueous liquid obtained thereby contained glucose, various salts and a crystallizable organic acid, which appears to be peculiar to this plant, and was also obtained from the etherial liquid by evaporating it and treating the residue with chloroform, which leaves it undissolved, together with wax and yellow coloring matter. On evaporating the chloroform, a greenish-brown resin was left, which had a strong and characteristic odor, was exceedingly acrid and produced a burning sensation when applied to the skin.

Contrary to the observation of Reiss and Will, the author found the viscous exudation of the glandular hairs to be destitute of acid reaction, and was unable to obtain formic acid, which was stated to be the principle by which the leaves convert albuminoid matters into peptones. —*Jour. de Phar. et de Chim.*, June, pp. 465–468.

Thapsia garganica, *Lin.*—The root of this plant, which grows in Northern Africa and Southern Europe, is frequently employed in France. Perron states that there are two similar plants in Africa, called by the Arabs *bou-nefa zkar*, or male thapsia, and *bou-nefa nza*, or female thapsia, the former being the officinal and stronger one. The latter is far less acrid, has longer, broader, thicker and less divided leaves than the former, and the leaflets are frequently digitately three-lobed.—*Ibid*, p. 468.

A New Rhubarb.—M. Colin, of Verdun, has received a plant which M. Chauveau considers to be the source of Chinese rhubarb. The plant, having produced flowers, was submitted to Prof. Baillon for examination, who recognized it as a variety of *Rheum hybridum*, which he names *Colinianum*, and found a section of the root to have the characters of a pretty good rhubarb. This appears to sustain the opinion expressed by Baillon in 1876, that the Chinese rhubarb is probably obtained from several species.—*Ibid*, p. 484.

A fluid extract of ergot for hypodermic injection is prepared by Yvon in the following manner: Coarsely powdered ergot is deprived of its fixed oil by treatment with carbon bisulphide, and then dried in a dark place until the odor of the menstruum is no longer observable. The powder is then displaced with a cold solution of 4 parts of tartaric acid in 1,000 parts distilled water; the percolate is heated to coagulate albuminoids, carefully evaporated to one-third, cooled and filtered. The filtrate is digested with a slight excess of freshly-precipitated calcium carbonate to remove excess of tartaric acid, and the clear filtrate concentrated to a syrupy consistence, mixed with strong alcohol, again filtered, treated with animal charcoal, filtered and evaporated. The residue is taken up by distilled water, 0·15 gram of salicylic acid added for every 100 grams of ergot, and then enough water or cherry-laurel water to make the weight of the solution equal to that of the ergot. After several days' repose, the clear liquid is put into small vials. The fluid extract is of a handsome amber color, keeps well and is quite efficient.—*L'Union Pharm.*, May, p. 133.

Preparation of Ergotin.—P. Carles' experiments lead him to regard the following as the best process for preparing *Bonjean's ergotin:* The moderately coarse powder of ergot is exhausted by successive maceration with 2 or 3 portions of cold water. The mixed infusions are rapidly evaporated in a water-bath until at that temperature it has the density of 24°B. (about 1·20 sp. gr.) It is allowed to cool, mixed with 6 parts of 90 per cent. alcohol, the mixture set aside for 24 hours and the clear liquid evaporated to the consistence of an extract. Thus prepared, ergotin is of a homogeneous consistence, when recently made, or somewhat crummy when old, has a reddish-yellow color, a bitter somewhat piquant taste, and an odor resembling that of roast meat, when in contact with water or heated. It is very hygroscopic, has an

acid reaction, dissolves entirely in 70 per cent. alcohol and yields with water a rather turbid solution, becoming clear by the deposition of a little resin. It should not contain over 10 per cent. of moisture, and on incineration should leave not over 5·5 per cent. of ash.—*Jour. de Phar. et de Chim.*, July, pp. 45–48.

The pancreatic liquid, acccording to Th. Defresne, contains three distinct ferments, of which *myopsin* dissolves albumen, *amylopsin* saccharifies starch, and *steapsin* decomposes fats. The first is obtained from the pancreas of an omnivorous animal, as follows: 100 grams of a filtered solution, containing 15 grams of dried pancreatic juice, are mixed with 40 grams of acetic acid (equivalent to 7·37 grams H_2SO_4);[1] after 24 hours the mixture is filtered, and the filtrate mixed with an excess of alcohol. *Myopsin* forms garnet-colored shining scales, which are soluble in water, the solution being coagulated by heat; it digests 104 times its weight of albumen, but does not affect starch or fat.

The other ferments are bestobtained from the pancreas of ruminants, for instance, the ox, which contains no myopsin. A concentrated filtered solution of beef pancreas is mixed with sufficient alcohol to make the mixture of an alcoholic strength of 26 volumetric per cent. The precipitate collected after 24 hours, and washed with 26 per cent. alcohol, constitutes *steapsin*, which when dry is in translucent shining scales, which are soluble in water. It has no action on starch, but decomposes 24 times its weight of fat. It is precipitated and rendered inactive by acetic acid.

To 100 grams of the liquid of beef pancreas 15·71 grams acetic acid (equal to 2·88 grams H_2SO_4)[1] are added; the precipitate is separated, and before the expiration of two hours the clear liquid is precipitated by 200 grams of 85 per cent. alcohol. After washing and drying, *amylopsin* forms lemon-yellow shining scales, which saccharify 25 times their own weight of starch, are soluble in water, the solution being precipitated by alcohol and strong acetic acid, and coagulated by heat.—*Rép. de Phar.*, June, 244–246.

Alteration of Calomel.—Mr. Jolly has determined the amount of corrosive sublimate formed from 1 gram of calomel, after digesting it for six hours, at a temperature of 40°C. (104°F.), in 100 grams of distilled water to which the following additions had been made:

[1] This indicates an acetic acid containing 23 per cent. $C_2H_4O_2$, which has the spec. grav. 1·0324.—EDITOR AM. JOUR. PHAR.

0·2 grm.	muriatic acid	gave ·003 $HgCl_2$	0·5 grm.	soda	gave ·006 $HgCl_2$
0·5 "	sodium chloride	" ·001 "	1·0 "	sodium carb.	" ·004 "
2·0 "	citric acid	" ·001 "	1·0 "	magnesia	" ·003 "

Calcined magnesia and calomel, each 1 gram, were mixed; on washing the powder, after 24 houts, with distilled water, ·001 gram corrosive sublimate was obtained. Lime has the same effect; but, after digesting mixtures of calomel with carbonate of calcium or of magnesium and distilled water, no change was observed after six hours. Troches of calomel made with pure sugar, free from lime, did not contain a trace of corrosive sublimate after having been kept for several months.—*L'Union Phar.*, 134–136—*Gaz. Médicale*

THE BOTANICAL CHARACTERS OF DUBOISIA MYOPOROIDES, R.Br.

BY PROF. DR. DELANESSAN.

This is a handsome, erect shrub, about 4 or 5 meters high, which is indigenous to New Caledonia and some parts of Australia. The stem and larger branches are covered with a thick and fissured corky layer; the branches terminate in conical, one-sided racemose cymes of small white flowers. The leaves are alternate, somewhat decurrent, simple, elliptic-lanceolate, exstipulate, entire, narrowed at the base into a short petiole about 2 centimeters long, and there furnished with two small, lateral, narrow leaflets. The entire length of the leaf is 10 or 13 centimeters, its width near the middle 1½ to 2 centimeters; the limb is thin, but firm, shining and smooth. The mid-rib is slightly prominent, the lateral nerves are alternate and fine. The floral leaves are shorter, sessile, elongated, narrow-elliptic and gradually reduced to short bracts.

Throughout the greater part of the year the cymes contain buds and flowers, and fruits in different stages of maturity. The flowers are hermaphrodite, with a convex receptacle, a short monosepalous cup-shaped and five-toothed calyx, and a monopetalous corolla, having a funnel-shaped tube and a somewhat bilabiate, 5-lobed limb, the lobes being induplicate and contorted in præfloration, alternate with the calyx teeth, the two posterior ones narrower, the anterior ones larger than the others. The four didynamous stamens are inserted in the corolla tube; no fifth stamen or rudiment of it could be observed, although figured by Endlicher in Iconographia, and admitted by Bentham and Hooker. The filaments are flattened, somewhat broader

at the base; the anthers reniform, attached by the inferior concave margin, and dehiscent by a single cleft, extending the entire length of the superior border. The ovary is superior, ovoid, two celled, with a small disk at the base, surmounted by a cylindrical style which terminates with a nearly entire stigma, and in each cell with twelve anatropous ovules. The fruit is a two-celled, fleshy, roundish, black berry of the size of a small pea, surrounded at the base with the persistent calyx

DUBOISIA MYOPOROIDES, *R. Br.*

and terminating above into a short point, formed by the base of the style. The seeds, of which 2 or 4 are in each cell, are elongated, reniform, larger at one end, brown, reticulate on the surface and enclose under the hard, but brittle integuments, a rather abundant albumen, which surrounds the axile cylindrical curved embryo, pointing the radicle to the narrow end of the seed.

Duboisia myoporoïdes is difficult to classify. Endlicher placed it in the order of *Scrophulariaceæ;* but Bentham and Hooker amongst the

Solanaceæ, tribe *Salpiglossideæ*, near the genus *Anthocercis*, Labill. Excellent reasons may be advanced for each classification, the plant furnishing another proof of the close relation of the two natural orders, and of the impossibility of absolutely distinguishing them.—*Bull. gén. de Thérap.*, April 30, p. 362. M.

PELLETIERINA, an Alkaloid of POMEGRANATE BARK.[1]

By M. Tanret.

It is usually recognized that the bark of the pomegranate, both stem and root, is active as a febrifuge in the fresh state, whilst that after drying and being kept some time it loses part of its virtue. The most natural explanation of this difference of action would perhaps be that the active principle of this bark is very liable to alteration. In previous researches, however, no such body had been met with, but the author has been successful in discovering in the bark a volatile alkaloid, which he has recently brought under the notice of the Aademy of Sciences. This alkaloid he proposes to call "pelletierina," in honor of the learned man who contributed so largely to the history of the alkaloids.

In preparing pelletierina pomegranate bark (from the stem and roots) is reduced to a coarse powder; this is moistened with tolerably thick milk of lime, and afterwards lixiviated with water, and the liquor vigorously shaken up several times with chloroform. The chloroform is then separated by means of a funnel having a stop-cock and shaken with sufficient acid to render it neutral or slightly acid. In this way solutions of sulphate, hydrochlorate, nitrate, etc., of pelletierina can be obtained, which may be crystallized by evaporation in a vacuum over sulphuric acid. To isolate the alkaloid it may be set free by treating the saline solutions with carbonate of potash and agitating with ether or, better still, chloroform. The etherial or chloroform solution then being distilled at a gentle heat the alkali is left as a residue.

One kilogram of dry commercial bark yielded to the author by this process four grams of crystallized pelletierina sulphate. With fresh bark the yield would probably be greater.

[1] "Comptes Rendus," vol. xxxvi, p. 1270.

Pelletierina is of an oleaginous consistence and is colorless when obtained by evaporation of its etherial or chloroformic solution in a vacuum, but when the solution is distilled in the open air the alkaloid becomes slightly yellow. A match dipped in pelletierina burns like one saturated with an essential oil.

Pelletierina is volatile, and has a slightly stupefying aromatic odor. It gives off vapor at the ordinary temperature, and the oil spots that it forms on paper disappear after exposure to the air for a short time. It boils at about 180°C., becoming strongly colored in the air, but it commences to distil at a much lower point. The alkaloid is very soluble in water, alcohol, ether, and especially in chloroform, which readily removes it from aqueous solutions.

Pelletierina is a powerful alkali, saturating acids to form salts. Upon bringing near to it a rod dipped in hydrochloric acid white fumes are formed as with ammonia. It does not precipitate solutions of the metals of the earths and alkaline earths, but it does precipitate solutions of most of the true metals. Thus it gives a white precipitate with salts of lead, mercury, zinc and silver, the last two being redissolved in excess of pelletierina. With nitrate of cobalt and with sulphate of copper it gives blue precipitates which are not redissolved in excess. It does not precipitate chloride of platinum, but it precipitates the chlorides of palladium and of gold, the last precipitate being reduced by heat. Further, like other alkaloids, it is precipitated by tannin, bromine water, iodo-iodide of potassium, iodide of mercury and potassium, iodide of potassium and cadmium and phosphomolybdic acid. The precipitate formed with tannin is soluble in an excess of the reagent; that formed with bromine water is soluble in an excess of pelletierina.

The author has prepared the sulphate, hydrochlorate and nitrate of pelletierina in crystals. These salts are extremely hygroscopic. Obtained by evaporation of their solutions in a dry vacuum they are colorless. If the neutral solutions are evaporated in a stove they become colored yellow, and at the same time by loss of part of the base they acquire an acid reaction. The salts have a slight odor, and their taste is bitter and aromatic.—*Phar. Jour. and Trans.*, June 22, 1878.

MECONOIOSIN, A NEW DERIVATIVE FROM OPIUM.

By T and H. Smith.

In the final isolation of meconin, the oleaginous-like liquid containing it, upon being left to itself for some days, sets into a mass of crystals. Those crystals, upon being drained, and cautiously washed with cold weak spirit, are to be boiled in a large quantity of water. The filtered liquid gives a crystallization of meconin, and the mother-liquor, when concentrated, and upon being set aside for a time, yields beautiful leaf-like crystalline masses of the body to which we have given the name of Meconoiosin.

This remarkable crystalline form, which, in its impure state, is assumed by meconoiosin, as well as the brown color of the crystals, enables this body to be readily distinguished from the soft and nearly white meconin, which crystallizes along with, and upon it, in a manner not unlike the incrustation of minute shells upon a rock. If this meconin be now removed, the meconoiosin, by means of a few crystallizations from hot water, with the aid of charcoal, may be obtained in the pure state, free from color.

This substance is especially interesting because that now, in it, a second chemically indifferent body existing in opium is met with. Hitherto meconin alone has been distinguished by this characteristic. Moreover, the respective chemical constitution of those two opium products reveals an apparent relation, meconin being represented by the formula $C_{10}H_{10}O_4$, and meonoiosin by that of $C_8H_{10}O_2$. Both bodies are freely solube in alcohol and ether, but as regards their solubility in water, the two substances present a striking contrast. Meconin is very slightly soluble in cold water; and in boiling water, unless in the proportion of about 1 in 50, it refuses to dissolve, remaining at the bottom of the liquid, like a heavy oil. Meconoiosin, on the other hand, is soluble in 27 parts of cold water, while in boiling water it is soluble to almost any extent, forming as the heat rises, and before being shaken up, a syrupy solution at the bottom of the liquid.

We have not yet ascertained the boiling point of meconoiosin, but it has been heated to 280°C. without boiling. It melts at 88°C.

When heated with slightly diluted sulphuric acid, and when the evaporation has reached a certain point, meconin produces a beautiful green color. With meconoiosin, under the same circumstances, the coloration is deep red, becoming purple.

In our case at the Paris Exhibition are shown crystalline specimens of meconoiosin, both in the pure and in the impure form.—*Phar. Jour. and Trans.* [Lond.], June 8, 1878.

NOTES ON THE TANNINS.

By B. H. Paul, Ph.D., and C. T. Kingzett.

In a paper recently published by Mr. H. R. Proctor he has shown that no two processes for the estimation of tannin give similar or comparable results, although when the same process is tried against products of the same nature, the results obtained by each process are tolerably constant, that is to say, cutch may be compared with cutch, mimosa with mimosa, and tannin with tannin, so long as the same process is employed; but even in this case tannin cannot be compared with cutch.

In the course of professional practice we have had occasion to examine various tanning materials, in such a way as to enable us, if possible, to value one kind of material against another; and, to make a long story short, it may be said our results fully sustained Mr. Proctor's statements. We could compare cutch with cutch, but not with ordinary gallotannic acid, as it is called, and even when each kind of substance was re-examined by different processes, varying results were obtained. Thus a sample of tannic acid (sold as pure) showed with Gerland's antimonial process 76 per cent. of pure tannin; by the volumetric process, employing lead acetate and using potassium ferricyanide as an indicator, 179 per cent.; and by the indigo process it showed (using the figures worked out by Neubauer) 135 per cent. tannin, which figure, corrected for admixed gallic acid by the gelatin and salt treatment, became 93 per cent. real tannin

A number of perfectly unmeaning results were therefore obtained, and the difficulty was made still greater when cutch and extract of mimosa bark were similarly compared.

Although the term "tannin" appears to indicate that the astringent character of different plants is due to the presence of a common substance, this supposition is not only erroneous to a large extent, but it becomes delusive when an attempt is made to base analytical methods upon it. The commercial value of different materials can so far be ascertained only by the practical tanner.

If the various kinds of tannin were all glucosides, it might be possible to arrive at some sort of valuation by determining the amount of glucose which they are capable of yielding. It was this idea that led to the experiments detailed in the paper.

Strecker stated that ordinary gallotannic acid (from gall-nuts) was a glucoside, splitting up when boiled with dilute acid as follows:

$$C_{27}H_{22}O_{17}+4H_2O=3C_7H_6O_5+C_6H_{12}O_6,$$

but H. Schiff has recently shown that tannic acid as ordinarily prepared is only digallic acid, splitting up thus, $C_{14}H_{10}O_9+H_2O=2C_7H_6O_5$; and this view has been confirmed by Stenhouse in a study of the action of bromine upon tannin. Schiff, however, expresses the opinion that the unaltered natural tannin of gall-nuts may probably be a glucoside, not of gallic acid, but of digallic acid, and that it is to some extent decomposed by the mode of preparation (comp. foot-note, "Ann. Chem. Pharm.," clxx, 175). In that case its decomposition would be represented by the equation—

$$C_{34}H_{28}O_{22}+2H_2O=C_6H_{12}O_6+2C_{14}H_{10}O_9.$$

These statements of Schiff led us to examine a number of commercial samples of tannin, by boiling them with dilute acids and examining the products for glucose. The solution thus obtained reduced Fehling's solution, although in every case it was found to be quite free from sugar, and to contain only gallic acid. Moreover, the freedom of the original samples of tannin from any glucoside was shown by the fact that they gave no purple coloration with strong sulphuric acid alone, although when sugar was added the coloration came out strongly. This result is in accordance with the circumstance, mentioned by Schiff in a supplementary note to his paper, that tannic acid is now prepared commercially with dry ether, and not with ether containing water or with a mixture of ether and dilute alcohol. It seems, therefore, to be a matter of some doubt whether tannin is after all a glucoside even in its natural state, because if it were so, a process sufficient to effect its decomposition so far as to eliminate glucose, would scarcely stop at that stage, but would also presumably give gallic acid and not digallic acid.

As we could find nowhere any statements regarding the constituents of cutch and mimosa bark extract, further than that they both yield a peculiar acid named *mimotannic acid*, some experiments were made also with these materials.

Cutch of commerce is a hard, brownish-black, shining substance, prepared in India and elsewhere from the *Acacia Catechu*, and other trees.

The method of procedure employed in our experiments consisted in boiling cutch for a number of hours with a quantity of dilute sulphuric acid (2—5 per cent.) During this operation 5 per cent. of a dark brown insoluble matter forms, which appears to be an imperfectly changed substance, judging from its general characters and from the fact that it gives the reactions of a glucoside, only in a less degree than the original cutch. The sulphuric acid solution admits of treatment in two ways. It may be precipitated either by acetate of lead or by baryta-water, both of which reagents remove the same acid substance, and leave glucose of an unfermentable character in the filtrate. This glucose was estimated at 25 per cent. on the original cutch.

Mimosa bark is the product of the *Acacia mimosa*, and furnishes in part the cutch of commerce. Extracts made of this bark gave, by the processes just described, similar results, the sugar obtained being estimated at about 8 per cent. on the bark.

The peculiar acid removed by precipitation with acetate of lead or baryta-water deserves a few words. If lead be employed, the acid may be obtained by decomposition of the precipitate with sulphuretted hydrogen, and removal of the sulphuric acid from the concentrated filtrate by means of carbonate of barium or carbonate of lead.

If baryta-water be employed, it is best to decompose the precipitate with sulphuric acid, and then to remove the excess of acid from the filtrate in the same way.

The solution of organic acid thus obtained is of a faint red color, and shows the following reactions:

1. An intensified red color on addition of ammonia.
2. A dark color with ferric chloride, but only a trace of precipitate.
3. No appreciable reaction with ferrous sulphate.

But a solution rendered neutral with soda became much darker itself, and gave

1. With ferric chloride a dark-colored precipitate.
2. With ferrous sulphate a bluish-black precipitate.

It also gave precipitates with other reagents.

On evaporating a solution of the free acid, oxygen was evidently absorbed, and a dark-brown matter deposited on the sides of the dish.

In fact it was impossible to concentrate the solution or to work profitably with it any further. Without attempting to describe the characters of the insoluble matter formed during the boiling of cutch with sulphuric acid, the foregoing notes may be summarized as follows:

1. The supposition that tannin, as it exists in gall-nuts, is a glucoside, is rendered doubtful, and the sugar met with in some samples of tannic acid is more probably referable to an impurity, as Rochleder and Kawalier assumed. Schiff leans to the opinion that the tannin in gall-nuts is a glucoside, but he states that the gallotannic acid met with in commerce is not a glucoside, but digallic acid.

2. The astringent principle common to cutch and extract of mimosa bark is shown to be either a glucoside or associated with a substance of that nature, since they both yield unfermentable sugar, together with a peculiar acid distinct from gallic acid.

The specimen of sugar exhibited has been purified by redissolving in water, precipitation with ammoniacal lead acetate, and decomposition of the precipitate with sulphuretted hydrogen.—*Jour. Chem. Soc.*, May, p. 217.

COMPOUNDS of SALICYLIC ACID with ALBUMINOIDS.

By Fr. Farsky.

The author has prepared compounds of egg-albumin, casein, fibrin and syntonin with salicylic acid by several methods. Either the albuminoid and the acid were mixed together and allowed to stand with constant stirring, or the two were combined in a dialyser, or the vapor of the acid was made to act on the finely powdered substance. Whichever method of preparation was adopted, the solid substance was finally extracted by pure ether, which was shaken up with it as long as the filtrate gave a reaction with ferric salts. The albumin-compound was then washed with hot water, and dried in an air-bath at 120—130°.

Analyses showed that on the average 14·16 per cent. of salicylic acid was combined with 85·84 per cent. of the albuminoid, which points to the formula $C_{72}H_{112}N_{18}SO_{22} + 2C_7H_6O_3$. These compounds are found to be quite as easily digestible as the uncombined albuminoids, so that salicylic acid might possibly be used for the preservation of feeding-stuffs.

In connection with the above researches the author has been enabled

to make a more accurate investigation of salicylic acid, and he gives the following account of it. It crystallizes from concentrated solutions in slender, almost colorless needles, from dilute solutions in larger prismatic, very hard crystals, often very prettily grouped. If, however, other bodies are present in the solution, and more especially if they are organic bodies, regular crystals are not formed, but, according to the nature and quantity of the admixed body, either crescent-shaped, annular or tufted forms which scarcely resemble crystals, are obtained.

When the foreign body is removed the acid gradually regains the capability of forming acicular crystals. Freezing the solution also brings about the change. The acid melts at 157·5°, and sublimes at 200°, but even at 80° a considerable quantity volatilizes. Perfectly pure crystals may be obtained by heating a solid body containing the acid, or a solution of the acid at this temperature in the air- or water-bath. The acid, as is well known, splits up on boiling into carbon-dioxide and phenyl-alcohol; but it is quite sufficient to heat the solution of the acid or certain salts, especially in presence of other acids, for a long time on the water-bath, to bring about this change. Hydrated sulphuric acid decomposes salicylic acid only when it is added all at once to the solid acid or its solution.

Permanganate of potassium, especially in presence of sulphuric acid, oxydizes salicylic acid, and among other products of the decomposition are found formic and carbonic acids and water. A similar decomposition is effected by boiling the acid with potassium bichromate and sulphuric acid. If the solution of the acid is heated with the bichromate without addition of sulphuric acid, a body passes over with the steam which has an unpleasant odor; it has not been examined. When salicylic acid is brought into contact with ferric acetate, it combines with the iron, the liquid becomes of a violet color, and deposits a dirty violet precipitate of $Fe_2H_2O_4$.

This hydrate dissolves in water and forms a golden-yellow liquid, which can be concentrated, but is decomposed by contact with acids, bases, salts, alcohol, ether, and even filter paper, and rendered insoluble. If, however, the solution of the ferric salt is tolerably concentrated, and especially if the mixed solution is not too acid, a brown salicylate separates out. The acid behaves in a similar way to lead acetate; lead

salicylate is formed, and very strong vapors of acetic acid are evolved in the cold.

Salicylic acid forms three salts with ferric oxide, a normal salt, a basic salt and a so-called ferric ferro-salicylate.

Compare the author's paper on the "Application of these salts to acidimetry and alkalimetry."—*Wien. Sitzungsber.*, lxxiv. 49, from *Jour. Chem. Soc.*, March, p. 224.

THE PREPARATION OF SAPO VIRIDIS.

By E. B. Shuttleworth.

During the past two or three years several formulæ have been published for the preparation of substitutes for green soap, but, as far as my own experience goes, none of them give satisfactory results. A so-called green soap, used until lately in the hospitals here, consisted of a partly saponified, yellowish and almost odorless mass, formed by boiling together, for a considerable time, a mixture of 2 parts spermaceti and 1 of solution of potash, sp. gr. 1·300. Another formula, much nearer the mark, directs the saponification of 1 part of linseed oil by an equal weight of solution of potash, sp. gr. 1·130. The quantity of potash is, however, insufficient, and as one of the therapeutical essentials of the preparation is that the alkali be in slight excess, the effects realized are not always those which are anticipated. Lastly, we have a recipe, given in a short paper by Mr. Herman Betz, in the "Amer. Journ. Pharm.," from which it has been reproduced in most of the pharmaceutical serial publications of the time.

On first looking over this formula, I did not notice that the solution of potash—presumably that of the U. S. P.—is ordered in only about one-third the quantity required for saponification, and consequently any attempt to follow this recipe strictly would certainly end in failure and disappointment. Druggists are not always skilled soap-boilers, and though the operation is simple it requires considerable experience. I have, therefore, taken the liberty of correcting this error, and also beg to add a few plain and practical directions regarding the process.

In a clean pot or dish, preferably of iron or copper, and capable of containing at least three times the quantity, put 1 part, by weight, of linseed oil, heat gently and add in two portions, 3 parts in all, by measure, of liquor potassæ, U. S. P. or B. P., providing either come

up to the standard requiring 5·8 and 5·84 per cent. of hydrate of potash. Boil quietly and stir frequently until the mass becomes clear, which, with 4 ounces of oil and 12 fluidounces of liquor, will require about one hour, and with 10 pounds of oil about five hours. If, during the process, the mass becomes too thick to stir easily, add a little water. Allow the soap to become cool, but before it sets work in the coloring matter, which must be previously prepared by boiling finely powdered indigo with water until the color is formed into a thin paste. Twenty grains of indigo, boiled with 1½ ounce of water until the mixture is reduced to about 1 drachm, will answer for the soap from 4 ounces of oil. The soap must not be too hot, nor must it be reboiled after adding the coloring, or the green will be destroyed. Mr. Betz's statement, that nothing answers so well as "the green coloring matter precipitated from a solution of indigo by lime," is, to say the least of it, very vague. The method I have given is that pursued by continental makers of green soap,[1] and works well. A Berlin-ware or Wedgewood dish may, of course, be used instead of iron or copper, but as the boiling point of the mixture is high there is great liability of fracture, and cold water must be added very cautiously, and the stirring must be almost continuous.

The proportions of oil and alkali given above are such as will turn out a satisfactory article with most samples of linseed oil, and with lye of the proper strength. I think these definite directions regarding quantities advisable for those who have not had much experience in saponification. The best guide in soap-making, where the strength of the lye is not known, is that afforded by applying a very small portion of the soap to the tip of the tongue. The sharp taste of the alkali indicates more boiling or more oil, or perhaps more water. This test, though not very scientific, is eminently practical, and is very generally employed.

The product will be about twice the weight of the oil used, and should be of a dull bottle-green color, and in consistence at least not thicker than lard or butter at moderate temperatures, just so that it will retain its form and might be carried on paper.

Genuine green soap should be made from hempseed oil, and is largely used in France (*savon vert*), Germany (*grüne Seife*) and other continental countries, where it is almost universally employed in the house-

[1] "Ure's Dictionary," vol. ii, p. 699.

hold. It is not, however, always made from this stock, but often of other vegetable and, perhaps, animal oils, and is then colored in the manner I have indicated. Under the name *Sapo Viridis* it is official in the German Pharmacopœia, but this authority does not afford any other information than that the soap is "a lubricous, soft, yellowish-green mass, of a nauseous smell." A tincture, or solution in spirit, is used in some parts of this country, but I am not aware of the exact strength. —*Canadian Pharm. Journ.*, June, 1878, p. 345.

Toronto, May 10th, 1878.

DIALYSED IRON AS AN ANTIDOTE FOR POISONING BY ARSENIOUS ACID.

By W. Gibbons.

It has already been proposed that the solution of dialyzed iron should be used as an antidote in cases of poisoning by arsenious acid, but up to this time no one has given any proof as to the value of these suggestions.[1] The supposition was founded on the knowledge that freshly prepared peroxide of iron was the usual remedy used, as it formed with the arsenious acid held in solution in the stomach an insoluble substance, having the formula Fe_32AsO_4. This fact was pointed out by Dr. Bunsen about forty years ago.

On hearing this I was induced to make the following experiments: I heated ¼ liter of water in a flask to the temperature of the human body (98·4°F.) and mixed with that 7·1 cc. (fʒii about) of an acid solution containing 1 grain of As_2O_3 in the quantity taken (Liq. Arsen. Hydrochlor. B.P), to that I added 14·2 cc. of the solution of dialysed iron (strength 2 gr. in fʒi) and kept this mixture at a constant temperature, *i. e.* 98·4°F., for about one hour without obtaining any result. Now as the usual method of administering moist ferric oxide is, first to give a dose of a solution of some precipitant such as bicarbonate of soda, or a mixture of magnesia and water, followed by a large dose of the solution of perchloride of iron, I determined to follow up that method. I took all as before, but in addition I used a small quantity of a solution of bicarbonate of soda. I then found that the arsenical solution was acted upon and the desired result obtained. In the first

[1] Some experiments in this direction by Mr. Mattison, which the author appears to have overlooked, are recorded in the present volume, before.—Ed. Ph. J.

case I allowed the mixture to remain together for about one minute only, and on collecting the precipitated oxide of iron and washing, I found that already it had absorbed some of the arsenious acid. A second mixture I kept together for one hour at the temperature already mentioned. I then found that about 40 per cent. of the acid was taken up. This I consider proves beyond doubt, that a dose sufficiently large of dialysed iron solution, preceded by a dose of a solution of bicarbonate of soda or of magnesia (to neutralize the acidity of the stomach, and using an excess), is an antidote in poisoning by arsenious acid.

According to Dr. Maclagan at least twelve parts of moist peroxide of iron prepared with ammonia are required for one of arsenious acid, from which we can conclude that three volumes (at least) of the dialysed iron solution (2 gr. in f℥i) are required for one volume of either of the arsenical solutions of the B.P. But as yet I can give no proof as to the correctness of this statement.

Pereira says that, "moist ferric oxide is only an antidote where solutions of arsenious acid have been used, and not when the solid acid has been taken." But as the arsenic must enter into solution with the liquid contained in the stomach, it stands to reason that the antidote is as good in one case as in the other, especially as the arsenic has no action in the solid form.

In conclusion, I must add that the advantages over the ordinary method of administering the antidote are as follows:

Firstly, the solution of perchloride of iron has to be largely diluted in order to make it palatable, whereas dialysed iron does not require much water, as it can almost be taken as it is, and moreover it can be given in large doses with greater safety than ferric chloride solution.

Secondly, the amount of magnesia or alkaline carbonate in the case of dialysed iron is but small, as it has only to overcome the acidity of the stomach before acting upon the antidote, but with ferric chloride solution it is much larger, for in addition to the acidity spoken of, the alkali has to overcome the acid of the ferric chloride solution used.

And lastly, as few chemists keep moist ferric oxide ready prepared, and even if they did it would have become inactive by keeping, whilst nearly all have dialysed iron, this supplies the most rapid mode, and also the best way of administering the antidote for this most painful poison.—*Phar. Jour. and Trans.*, June 15, 1878.

VARIETIES.

A new test for carbolic acid has been proposed by Prof. E. W. Davy, of Dublin. The reagent is sulpho-molybdic acid, prepared by dissolving 1 part of molybdic acid in 10 or even in 100 parts of pure concentrated sulphuric acid, and 3 or 4 drops of this solution are added to one or two of the liquids under examination placed on white porcelain. Immediately a light yellow or yellowish-brown tint is produced, which, passing into a maroon or reddish-brown, soon develops a beautiful purple coloration, the development of which will be hastened by the application of a *gentle* heat, and which remains unchanged for a considerable time. If undiluted carbolic acid is used, the reagent will produce a dark olive, quickly changing to a very deep blue, but not to purple.

The same reagent applied to an aqueous solution of *wood tar creasote* will produce a brown or reddish-brown color, which, on standing or warming slightly, becomes fainter, passing to a light yellowish-brown. Even small quantities of carbolic acid may be detected in the creasote by dissolving 5 or 10 drops of it in half an ounce of water and distilling the solution; the first portion of the distillate will give the creasote reaction, while the purple coloration of carbolic acid will be obtained with subsequent portions of the distillate. The presence of 1 per cent. of carbolic acid in creasote may thus be detected. In the same way, the adulteration of oil of cloves[1] with carbolic acid may be recognized.—*Phar. Jour. and Trans.*, June 22, p. 1021–1023.

Undurability of Linen.—A linen manufacturer explains the reason why linen wears out much faster now than formerly, as follows: In the first place, rice starch is usually used now, which always contains caustic soda, used in its manufacture, which can be easily recognized by its peculiar salty, disagreeable, alkaline taste and its alkaline reaction on litmus paper. This, not being removed by water, but remaining in the linen, destroys it gradually. Besides the enormous weight of the flat-irons, often weighing over 20 lbs., and the additions for producing a polish, consisting of stearin, tallow, spermaceti, paraffin, etc., although of a harmless character, do their share in ruining it by forming a solid coating, the removal of which necessitates considerable otherwise unnecessary rubbing on wash-day. The author concludes in recommending the old-fashioned cooked wheat starch without any additions, stating that it will give an equal gloss without ruining the linen.—*Apoth. Ztg.*, May 11, p. 78.

Rice is of more use and of larger cultivation than any other cereal grown. It is almost the only diet of hundreds of millions of people in China, Asia, and all Eastern countries. In those countries it is used the same as potatoes, and is a substitute for them. Only at the North is rice looked upon as a luxury, to be used

[1] Oil of cloves produces with Froehde's reagent a deep blood-red, afterwards a deep cherry-red coloration.—Editor.

with milk and sugar. At the present low price of domestic rice, it is the cheapest food obtainable, not excepting potatoes. Potatoes contain about 80 per cent. of water, and do not gain much in the process of cooking. Rice has no waste whatever, contains only 22 per cent. of water, and in boiling gains three times its original bulk. Hence, one pound of rice, at 6¼ cents per pound, makes three times as much when cooked; equal to three pounds of potatoes, at 2½ cents per pound, or 7½ cents. Rice properly prepared should come upon the table dry, each grain unbroken, and served with the condiments used on potatoes, and be partaken of as a vegetable, with meats, and not as a dessert.—*The Sanitarian*, June.

Camphor and Tobacco.—In an article in the "Practitioner," Dr. Edward Noakes says that in cases of over-doses of tobacco, as in the sickness from smoking, etc., a dose of camphor has repeatedly proved antidotal in his hands.—*Med. and Surg. Reporter*, June 8.

Patent-leather varnish, as we are informed by R. Hennig, consists of a quickly-drying oil (linseed-oil) and Prussian blue, and is prepared as follows: Purified old linseed-oil is heated in a copper kettle to 50—60°C., and treated with fuming nitric acid, which splits the palmitin existing in it into palmitic acid and glycerin. The acids are then removed by heating with oxide of lead in the proportion of 250 grams of the latter to 10 kilos of the oil, and the decanted oil is heated to 100° C., when a saturated hot aqueous solution of permanganate of potassium is added in the proportion of 2 grams of the salt to 1 kilo of the oil. They are then heated, stirring continually, until the mixture becomes brown, when the heat is raised to 130°C. and all water is evaporated. The Prussian blue is then added through a sieve in the proportion of ¾ to 1 kilo of pure blue to every 10 kilos of oil, and the mixture is stirred and heated until a little of it spread on paper leaves a smooth, brilliant gloss. To fine varnishes finely-powdered gutta-percha is added in the proportion of 300 grams of the latter to 10 kilos of the varnish, and they are then allowed to settle for one or two weeks, when the clear, supernatant varnish is decanted.—*Chem. Centralbl.*, May 15th, p. 317.

Chrome blue is obtained by G. Bong by strongly calcining an intimate mixture of boracic acid and alumina, each 15 parts, magnesium carbonate 20 parts and chromate of barium 2 parts.—*Bull. Chim.*, 1877.

A homœopathic physician was arrested in Cologne on the charge of supplying a patient with medicine in the shape of powders contrary to the German laws, but was acquitted because it could not be proved by the prosecutor that these powders were neither simple or compound medicines, since they contained nothing but sugar of milk, according to the defendant's own statement.—*Apoth. Ztg.*, May 11th, p. 78.

Lead Poisoning.—An interesting case of lead poisoning through criminal negligence is reported from Mosbach. The patient began to suffer some years before 1876, and consulted several physicians in vain until Dr. Wittmer made a correct diagnosis, and after a treatment of over three quarters of a year entirely cured him. The poisoning was caused by imperfectly-tinned lead snuff-boxes, in which a particular brand of snuff was packed, which the patient was in the habit of buying from one and the same manufacturer, and which became contaminated with lead. A suit against the tobacco dealer was filed, who was convicted and sentenced to incarceration for eight days and payment of costs.—*Ibid.*, April 27th, p. 70.

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

American Pharmaceutical Association.—The Local Secretary, Mr. J. W. Rankin, has succeeded in securing excursion rates to Atlanta and return from the following points, at the figures named:

Clifton, Ont.,	$42.75	Greensboro, N. C.,	$17.90
Boston, Mass,	41.75	Salisbury, N. C.,	15.55
New York,	36.25	Charlotte, N. C.,	13.35
Philadelphia,	32.75	Spartanburg, S. C.,	9.60
Baltimore,	29.15	Greenville, S. C.,	8.00
Washington, D. C.,	26.75	Athens, Ga,	5.30
Norfolk, Va.,	32.50	Gainesville, Ga.,	2.65
Charlotteville, Va.,	25.80	St. Louis, Mo.,	33.60
Richmond, Va.,	24.65	Cincinnati, O.,	31.95
Lynchburg, Va.,	23.15	Louisville, Ky.,	26.45
Danville, Va.,	19.95	Nashville, Tenn.,	17.35
Goldsboro, N. C.,	22.95	Bristol, Tenn,	17.00
Raleigh, N. C.,	21.25	Knoxville, Tenn,	10.50

The fare between Galveston, Texas, and New Orleans, both ways, including berths and meals, will be $21; the fare from New Orleans to Atlanta and return, 6 cents per mile *one* way. From other points in the Southern States a similar liberal reduction has been made, and if members and delegates who contemplate attending the meeting will communicate with the Local Secretary, Mr. Rankin will send a circular giving more detailed information in relation to the Southern railroads. The fare from Boston, we presume, is for railway all through.

In the Southern States, the tickets are procurable by the members and delegates for themselves and their families at the depots of the above cities. The visitors from north of Washington will require a printed order, endorsed by the Permanent Secretary, *for each ticket* they may need. The tickets will be sold on and after August 25th, and will be good on the return trip until September 25th. They are to be procured in New York at the office of Mr. C. Yingling, general ticket agent, No. 9 Astor House, and in Philadelphia at the Baltimore R. R. depot.

The journey from New York to Atlanta requires about thirty-nine hours, and members leaving New York on Sunday, September 1st, at 9 P. M., Philadelphia near midnight, and Baltimore on Monday at 7 A. M., will reach Atlanta, without change of cars, on Tuesday, September 3, at noon.

The delegates to the *Conference of Schools of Pharmacy* will hold their first session September 3, at 9 o'clock A. M., and should therefore reach Atlanta on Monday, September 2; they should therefore leave not later than Saturday, August 31. It is contemplated to stop over Sunday at some convenient place, probably in Virginia. The Piedmont Air Line, which will convey the Eastern party, passes through some of the most interesting portions of Virginia, North Carolina, South Carolina and Georgia, and many places along the route will afford opportunities for spending some time pleasantly and profitably. It is the intention to visit several of these localities on the return trip. The route, it will be noticed, passes through a healthy section of the South, and at a considerable distance from that portion, where Northern visitors might be liable to expose themselves to malarial influence.

The sessions will be held in the State Capital building in the Representative Hall, and the exhibition room will be near by. Arrangements have been made with the "Kimball House" to accommodate the members and their families, and first-class accommodations will be had at two dollars per day.

The Permanent Secretary will issue his special circular notice in a few days, when, it is hoped, additional information will be given. Mr. G. J. Luhn has requested us to state that all members who may pass through Charleston, S. C., on their way to Atlanta, will be welcomed by the *South Carolina Pharmaceutical Association.*

Philadelphia College of Pharmacy.—Professor R. Bridges has requested Samuel P. Sadtler, Ph.D., Professor of Chemistry in the University of Pennsylvania, to act as his assistant during the coming lecture course. Prof. Sadtler has consented, and the Board of Trustees has approved the arrangement. We understand that Prof. Sadtler will deliver a series of lectures on chemical physics to the junior class, and give his attention to the lecture experiments to be made in the course on chemistry. The illustrations, by experiments and other means, will again be considerably increased, and a number of new apparatus, etc., have been procured for the purpose

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Kentucky Pharmaceutical Association.—Pursuant to resolution at the "Meeting of Organization," held in Frankfort, July, 1877, the Kentucky Pharmaceutical Association met in the council chamber, in the city of Covington, May 15, 1878, at 2.30 P. M.; the President, W. H. Averill, Esq., of Frankfort, in the chair. The President read a short address of welcome, in which he congratulated the members on having effected a permanent organization calculated to foster and develop the scientific interests of pharmacy in Kentucky. The report of the Committee on Constitution and By-Laws was received, amended and adopted,—with the provision that the by-laws be referred to a special committee, to report any change necessary

to their perfection at the next annual meeting. An election of officers was then held, and resulted as follows: W. H. Averill, Frankfort, President; Vincent Davis, Louisville, 1st Vice-President; G. A. Zwick, Covington, 2d Vice-President; M. Hermance, Covington, 3d Vice-President; W. G. White, Richmond, Recording Secretary; C. Lewis Diehl, Louisville, Corresponding Secretary; Peter Nodler, Covington, Treasurer.

The Committee on Queries reported a series of ten queries for general acceptance, and for discussion at the next annual meeting. The President, with the advice of the Executive Committee, was empowered to appoint delegates to the meeting of the American Pharmaceutical Association, in Atlanta. After the the appointment of the standing committees for the year, the Association adjourned to meet in Louisville, during the month of May, 1879; the day and hour to be named by the President.

The meeting was well attended by pharmacists representing the various sections of the State, and the two sessions held were characterized by complete harmony and singleness of purpose.

C. Lewis Diehl, *Corresponding Secretary.*

British Pharmaceutical Conference.—The fifteenth annual meeting will be held at Dublin, Ireland, commencing on Tuesday, August 13, at 10 A. M. The sessions will be held in the hall of the King and Queen's College of Physicians, under the presidency of Mr. Geo. F. Schacht. The general secretaries are Prof. Attfield, editor of the "Transactions," and Mr. F. Baden Benger. Dr. A. Senier is assistant secretary, Mr. Wm. Hayes local secretary, and Mr. Louis Siebold editor of the "Year-Book of Pharmacy."

After the adjournment of the conference, an excursion through the Devil's Glen to Glendalough, or the Seven Churches, is proposed, the localities being in the county of Wicklow, the scenery of which is stated not to be inferior to any in the kingdom.

Pharmaceutical Society of Paris.—Mr. Méhu presided at the meeting held June 6. A communication by M. Defresne announced the isolation of three distinct ferments from *pancreatic juice* (see p. 386); it was referred for investigation and report to a committee consisting of Messrs. Petit, Yvon and Wurtz.

Mr. Bourgoin stated that a liter of water, at 15°C. (59°F.), would dissolve 1·25 gram of *salicylic acid*.

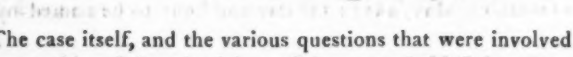
Mr. Cazeneuve reported on the *preparation of brucia and strychnia* from hoang nau bark; the two alkaloids are separated from each other as oxalates, brucia being precipitated at once; strychnia only at the end of 24 hours.

As a further characteristic of the alkaloid *duboisina*, Mr. Petit mentioned its behavior to polarized light, which is deviated 15·5° to the left by an aqueous solution of the alkaloid and its sulphate. Under the same conditions atropia shows no deviation.

The impurity of some commercial *iodide of potassium* was likewise referred to; some samples were stated to contain only 75 per cent. of pure iodide.

EDITORIAL DEPARTMENT.

An Apothecary's Mistake.—During the latter part of June a suit for damages has been decided at the County Court of Syracuse, N. Y., which is of considerable interest to the pharmacists of the United States. We have been favored by the Syracuse *Sunday Times* with the following fac-simile of the line, as contained in the prescription, and which we are assured is a very fair, though perhaps not absolutely perfect, representation of the original:



The case itself, and the various questions that were involved in it, were presented at a meeting of the physicians of Syracuse, held July 7, at which Dr. Cook was called to the chair. The following report of the transactions at this meeting is taken from the *Standard*, of Syracuse, for July 8. The proceedings were opened with the following statements made by Dr. Didama:

The Case.—On the 28th of last November, Adelbert Eno came to my office for examination and treatment. He was thin in flesh, of a pale, sickly appearance; his voice was hoarse and husky; he seemed weak and debilitated. I learned that he had a chronic cough with hectic fever and night sweats. On examination I decided that the disease was chronic bronchitis, tending to and already on the border land of *phthisis*. I prescribed cod-liver oil emulsion to improve his general condition, a good noonday dose of quinine to throttle the fever which was consuming his strength and blood, and a solution of atropia with elixir vitriol to arrest the drenching night sweats. This was the form of the atropia solution:

Sol. atropia (2 gr. to oz.), drachm 1; acid. sulph. aromat, drachms 4; syrup. ad oz. 2. M. S. Teaspoonful at bed time.

The note in parenthesis was for the guidance of the druggist, Mr. Eaton. I knew that Mr. E was a careful and intelligent pharmacist, but as there is no standard solution of atropia, I indicated the one which I am in the habit of prescribing. Some time during the following night I had an urgent call to visit Mr. Eno. Knowing that an ordinary dose of atropia could work no harm, and feeling a wicked need of rest after a hard day's work, I contented myself with sending a powder of morphine, and promised to call in the morning.

During the forenoon of the 29th I called and learned that Mr. Eno had taken about half a teaspoonful of the solution, that he had been delirious throughout the night, trying to get out of bed, coughing, complaining of burning in the throat, and the usual symptoms of an overdose of atropia. I was informed that Dr. Hubbell had been called; that he had examined the atropia solution and judged it to be some form of iron; that he gave belladonna as an antidote. I found the patient on the bed. He was rational and intelligent. He complained of a burning sensation in his throat and an inability to see distinctly. He said he was glad he did not take a full dose, if he had he believed it would have killed him. His pupils were largely dilated, pulse small and quicker than it was the day before, tongue parched and fevered, extremities cool, appearance of fatigue and exhaustion. I judged that an overdose of atropia had been taken, but I comforted the friends with the assurance that the worst was over, that no permanent mischief would result either from the dose he had taken at first or from the homœopathic belladonna solution given by Dr. Hubbell. I prescribed no antidote, for it was clear that none was needed

and that recovery would be speedy. I visited Mr. Eaton's drug store and learned from the clerk that a solution of 2 gr. to a drachm, instead of ounce had been prepared.

Within a week I visited Mr. Eno but twice. At the second visit the effect of the atropia had passed away. There was not the slightest dilation of the pupil, and there were no symptoms properly referable to the overdose he had taken. I learned that Mr. Eaton had prepared a new solution of the strength first ordered, and that a dose had been taken, with somewhat unpleasant effects. The night sweats still persisting, I ordered pills of oxide of zinc, which were effectual. During the months of December and January I made a very few visits, and I judged that the patient was making fair progress—not in recovery from atropia, for there was nothing which indicated that he had taken this drug—but in his bronchial difficulty, which had threatened to end—and which may yet end—in consumption.

Somewhere near the close of January I received notice that the patient had concluded to call in Dr. Whedon, and I learned about the same time that negotiations for a settlement with Eaton had failed. There was nothing that indicated to me the presence of chronic or other inflammation of the stomach Digestion was impaired, and so it was before the atropia had been taken. Vomiting may have been a symptom, but it usually accompanies pulmonary troubles, which are attended with a severe cough and hectic fever. Weakness was present, and the patient was ordered to keep quiet; not because of atropia, but because the consuming disease was still progressing and because exercise was thought to be hurtful.

I have no doubt that Mr. Eno took the half dose, equal to one-sixteenth of a grain, as stated by Mrs. Eno and commented on by Mr. Eno.

I have no doubt that this dose produced the symptoms described by Miss Eno, a lady of unimpeachable veracity.

I have no doubt that the effects of this considerably large dose rapidly subsided, and that within a week the patient was as if he had not taken atropia at all.

I have no doubt that but for the meddlesome interference of third parties, who hoped to make money out of the transaction, Mr. Eno would not have dreamed of instituting a suit.

How far a vivid imagination stimulated to unusual activity by the hope of gain, dexterously held out by the tempter, influenced the judgment and instigated the testimony of Mr. Eno, I leave others to judge. That a monstrous injustice has been perpetrated—that a cruel penalty has been inflicted on a careful and estimable druggist—that every physician and pharmacist is at the mercy of tramps and blackmailers, will, I trust, be evident before the close of this discussion. I propose to give a mere outline of points to be discussed, leaving to abler colleagues the filling in and elaborations.

Written Prescriptions.—Old signs and their ambiguity. The symbols for drachm and ounce resemble each other closely, and are not unfrequently confounded. For several years I have not used these symbols. I have written oz. for ounce and drachm in full. I have ceased to employ the Roman numerals, such as VIII for eight and LXVIII for sixty-eight. I have dropped the larger O as an abbreviation signifying pint, and have omitted the unnecessary symbol meaning scruple. I have tried to use words and abbreviations which were free from ambiguity, and I have reason to know that my practice has received the endorsement of not a few eminent and progressive members of the profession. And it is a source of no small mortification to me that a prescription of mine could have been misread and construed in a manner different from my intentions. Had I used the antiquated and obsolescent symbols instead of oz. and drach., I could not have wondered at the mistake which was made. I shall not return to the use of the awkward and delusive symbols. I may use the word *uncia* for ounce, or I may discard Latin entirely and employ the metric system. Latin is the universal language. Prescriptions written in it can be put up, as I have reason to know, anywhere in Europe. The metric system is not

yet thoroughly introduced nor understood. Pharmacists are bound to know the dose of poisonous drugs which they dispense.

In case of doubt or ambiguity of prescriptions, they must consult the authorities. The highest authority known to the pharmacist is the Pharmacopœia, or the Dispensatory, which is a commentary on the Pharmacopœia. If the Dispensatory authorizes a wrong dose, the physician who prescribes and the pharmacist who prepares it should not be charged with negligence.

Now, let us suppose that Mr. Eaton suspected that one-eighth of a grain of atropia was a large dose. He opens his medical bible—the last edition of the U. S. Dispensatory. He reads that a commencing dose is 1-15 of a grain,[1] and that this amount may be safely increased. The amount which seems to be ordered in the prescription is not twice the quantity which is indicated in the book as a commencing dose. If 1-15 is a safe commencing dose 1-8 cannot be extravagantly large, while 1-64 is too small to be of any service. So he reasons, and puts up the prescription. It is plain enough to you and me that the Dispensatory has made a mistake. Our knowledge has been drawn from a variety of sources. But is the pharmacist bound to be wise above what is written, and is he to be punished for the mistakes of the U. S. Dispensatory? Remember that Mr. Eno took less than the quantity sanctioned by the highest medical authority, and then judge if it was not a hard ruling that demanded of the studious druggist a wisdom superior to that of the book which he has been led to regard as unquestionable and unerring.

Effects of Atropia.—Atropia, as is well-known, is the active principle of belladonna and stramonium. In moderate doses, it is a safe and invaluable medicine. In overdoses, it produces temporary mental and physical derangements; it causes transient delirium and paralysis, as alcohol does, but it is speedily eliminated by the kidneys and other organs. It does not produce any characteristic organic lesion; and so, when it is eliminated, its effects cease. One of its earliest manifestations is a dilation of the pupil of the eye, and this dilation is the last symptom to disappear. When the pupil acts normally, it is safe to conclude that no portion of the drug remains, and that its effects have all ceased. The older observers mentioned inflammation of the stomach and intestines as a *post mortem* appearance. Now, if this inflammation were produced by the drug, in cases where the dose is not fatal, it would speedily subside without treatment, and would not remain after the elimination of the drug. The vomiting is no sign that inflammation is present. All the symptoms, the dryness of throat, the vomiting, the dilation of pupil are produced when the drug is injected into the arm, and when no portion comes directly into contact with the stomach. But late and careful examination finds no trace of gastric inflammation even in the fatal cases. Of course, then it does not exist in the cases which are not fatal.

The learned counsel asked me to name one authority which declares that inflammation is not found in the stomach after death. I could not do it. Neither could I have named one authority which states that atropia does not produce warts on the hands nor corns on the feet. The authorities tell what is found. They give minutely every *post mortem* appearance. And when H. C. Wood and Von Bœck, the latest authorities, make no mention of inflammation of the stomach, it is safe to conclude that inflammation is not produced by atropia. In regard to the permanent influence of the drug on the nervous system, there is the single statement of Dr. Garrod, that belladonna produced nervous depression in his case for two years, against the testimony of hundreds that the effects of atropia are very transitory. Dr. Garrod was honest, and he had no pecuniary temptation to lie or to exaggerate. No pettifogger of the baser sort had nagged and coaxed him to commence a suit for damages against his friend. No contract had been entered into with him that the impecunious pettifogger would pay the costs if the verdict were adverse, while a

[1] This refers to a typographical error on page 1099 of the fourteenth edition of the U. S. Dispensatory. "One-fifteenth" should be corrected to *one-fiftieth* of a grain.—Editor Am. Jour. Phar.

"wack-up" should be demanded only in case of a satisfactory and bounteous decision.

Dr. Garrod told what he believed to be the truth; but it is not at all improbable that the indistinct "nervous depression" may have been to a great degree imaginary or the result of causes other then belladonna. Belladonna contains active principles in addition to atropia, and these may have had an influence. At any rate, the experience of Dr. Garrod is unique; and neither physicians nor druggists should be held responsible for exceptional effects, so rare as to be almost incredible.

The Law, the Object and the Interpretation.—The Code of 1876 and 1877 provides: "A person duly authorized to practice physic or surgery shall not be allowed to disclose any information which he acquired in attending a patient in a professional capacity, and which was necessary to enable him to act in that capacity." And the Court of Appeals holds that any information, however acquired, which is necessary for a physician to prescribe for his patient is excluded. Judge Miller stated that such exclusion is necessary for the safety of the patient. Let us look for a moment at this monstrous enactment. Any person "duly authorized" to practice physics and surgery cannot reveal the condition of his patient even to protect the greatest fraud. But a person *not* duly authorized, a person not having a diploma, or having, as is sometimes the case, a forged diploma, can disclose any information which he chooses. The reputable physician, who knows all the facts in the case, must stand by with folded hands, and see an unscrupulous patient fleece his victim, while the charlatan, expelled from society for having spurious credentials, is permitted to give his base assistance to the side which offers the greatest recompense.

I take it that the law was intended to prevent revelations affecting the personal honor or the delicacy of the patient. It was unnecessary, so far as anyone worthy of a place in the profession is concerned, for the secrets of the medical confessional can never be extorted from the honorable physician. But there are worthless scoundrels who creep into every profession, and they must be restrained from blurting out unpleasant facts which have been communicated in confidence. Hence the necessity for some law. But this law shuts the mouths of those who would never open them to betray, while it authorizes the outcasts of the profession to divulge secrets dearer than life, or to demand blackmail as the price of concealment. It could never have been the intention of decent legislators to prevent a physician from contradicting a patient as to the effect which a certain drug produced. A nervous, hypochondriacal patient might exaggerate his symptoms; an unscrupulous one, under the goading of a famished legal barnacle, might not only exaggerate existing symptoms, but feign a multitude of new ones; and the attending physician is the only person in the world who can rightly weigh the real and detect the fradulent. It is monstrous injustice to admit the testimony of the interested fraud and exclude evidence that would reveal the imposition. It is well enough to forbid the revelation of disgraceful or ridiculous secrets, but the present enactment with its temptations to fraud, and its special license to the worst scapegraces in the world, is a hideous travesty of justice—a connivance at blackmailing—a monstrous blot on the statute-book of the Empire State. *It should be repealed.* I need not waste time in pointing out the inconsistent and unequal application of the law in the present case. I was forbidden by the Judge to testify as to the condition of Eno, yet I alone knew how the drug had not affected the patient. But Drs. Hubbell and Whedon were permitted to divulge all the information which they had obtained from Eno when he was their patient; and their testimony had undoubted weight in securing for the plaintiff the verdict of exorbitant charges.

The Effect on the Druggist.—That Eaton misread a reasonably plain description was established to the satisfaction of the jury. The damages assessed were simply enormous. But there need be no apprehension felt as the effect on the young man's business. His dearly bought experience will last him a life time. Henceforth there will be no such word as mistake with him. Every article in every prescription will be scrutinized with a care hitherto unknown to the craft. Public confi-

dence will be reposed because confidence has now a sure foundation, and troops of friends will hasten to express practical sympathy with one so outrageously fleeced.

Conclusion.— It is no part of my purpose to cast reproach upon the court, or to inveigh against the lawyers. The fairness and uprightness of the learned Judge needs no endorsement of mine The shrewdness and ability of the counsel are known to all men. Whether it would not have been wise and well for the Judge to have ruled that the law was never intended to be used, as in this case, to perpetrate injustice—and that it should not be so used—is a question for him. Whether a lawyer cannot be smart, and at the same time a gentleman, is a question purely of taste. As medical men and good citizens it is our duty to labor for the repeal of a law which rewards ignorance with special privileges, which affords ample facilities for fraud and extortion, and which shamelessly muzzles every witness whose testimony would uphold the right and trample down the wrong.

Dr. Benedict spoke of sharks outside of the legal profession. He gave a description of the marine shark, and drew a parallel picture of the land shark. His remarks were by turns hnmorous and sarcastic. He related instances where human pilot-fishes secured medical prey for the too willing sharks. He paid a high compliment to the skill and integrity of Mr. Eaton He stated that atropia and all the vegetable neurotics are evanescent in their effects. He doubted not that but for the efforts of the pilot-fish, Eno would never have attempted the consumption of Eaton. He paid a glowing tribute to the work and disinterestedness of the medical profession, and appealed to the doctors not to act as pilot-fish to sharks of any kind.

Dr. R. F. Stevens expressed his belief that a great wrong has been done by the recent verdict, wrong to the druggists and public generally. He thought it was an outrage to exclude competent testimony and admit that of those who are not authorized to practice. Druggists and physicians are in peril if this law is to be enforced.

Dr. Dunlap briefly remarked that it was well known that the effects of belladonna were transitory.

Dr. Doane wished the medical profession could expel all the sharks. He could see no reason why a man suffering from intoxication produced by atropia should make any more fuss than if he were drunk from alcohol. He thought that the verdict was obtained by the exclusion of evidence. He approved the writing out of drachms and ounces instead of using symbols. If the man did not suffer any permanent wrong, why should he be paid for it. Hundreds and thousands of persons have been poisoned temporarily by belladonna. The effects are never permanent.

Dr. Hawley judged from what he had heard that the druggist had been wronged, although he had made a mistake. He endorsed Dr. Benedict's eulogy of the medical profession and denunciation of sharks.

Dr. S. H. Moore commented on the duties of druggists and physician. He reflected severely on Drs. Didama and Benedict.

Dr. W. Manlius Smith said that one-eighth of a grain of atropia is an inconvenient but never a fatal dose. Atropia is anti-inflammatory instead of inflammatory. The early cases which seemed to show inflammation of stomach were produced by the staining of the berries. No recent authority speaks of inflammation of the stomach as the result of atropia. Regarding paralysis, Von Bœck says, that the tossing about of the patient shows he is not paralyzed; that afterwards there is

nothing but a want of co-ordinating power in the muscles from loss of sensation. Paralysis, if it occur, does not happen till near death. The so-called spasms were not convulsions but paroxysms of tossing about.

Dr. Cook, the chairman, called upon Mr. Fuller, who was present, to make remarks.

Mr. Fuller animadverted upon the law which permits fraud, if the recent decision is to be sustained. He judged that the shutting out of the testimony of the physician in attendance was not intended by the legislature, and was an outrage. The law should be such that it will be an easy matter to unearth and punish fraud.

The chairman closed the discussion with a statement of some of the jurors that the substantial agreement of the doctors in their testimony was very suspicious. He complimented druggists on the care usually taken to prevent mistakes.

We make also the following extracts from Judge Riegel's charge to the jury:

It appears that a dose of this preparation was administered to the plaintiff on the evening before Thanksgiving; that soon thereafter he was seized with violent spasms, his throat became dry, he felt a burning sensation in his throat and stomach, was seized with retching and vomiting, and tossed himself to and fro upon the bed, and the pupils of his eyes were dilated. His family became alarmed and sent for his relatives. After three o'clock he became easier. The immediate symptoms of the poison passed off within a few days, but it is claimed by the plaintiff that it produced effects more or less permanent. It is claimed that by reason of this poisonous dose he was rendered so feeble as to be compelled to remain indoors until the following April, during nearly all that time keeping his bed; that for a considerable space of time thereafter his sight was impaired so as to be unable to read at times; that the poison produced inflammation of the stomach, which caused frequent vomiting and loss of appetite for a considerable space of time; that his lower extremities are still partially paralyzed; that he has not wholly recovered from these effects of the poisonous dose.

It is conceded by the defendant that the immediate symptoms which are claimed to have followed the administration of this dose did and would naturally follow, but the permanent results which are claimed to have followed it are denied, and physicians have been placed upon the stand to prove that by the known nature of this poison, those results did not and could not have followed.

It being conceded that some evil consequences to the plaintiff did follow the administration of the poisonous dose, the extent of those evil consequences can only be material as bearing upon the amount of damages that should be awarded to the plaintiff in case the jury shall find the defendant liable. I will, therefore, call the attention of the jury first to the question of liability, and then to the question of damage.

The action is for negligence. It proceeds upon the theory that a man who follows the calling of a druggist holds himself out to the community as possessing the amount of skill, caution and prudence which a man exercising so responsible a calling ought to possess. The greater the danger to the public from want of skill, want of care and want of prudence in the conduct of any trade or calling, the greater the duty resting upon the person carrying on that trade or calling, that he possess and exercise that skill and prudence. There can be no doubt that it is the duty of every man who holds himself out to the community as a druggist, a compounder of drugs and medicines, many of which are deadly poisons, and when improperly administered dangerous to life and health, is in duty bound, first to possess himself of a competent knowledge of the nature and qualities of these drugs so as to know at a glance whether the dose as prescribed is dangerous—and that he cannot shelter himself from the consequences of ignorance in these regards behind the written prescription of a physician, however eminent.

A number of witnesses testify they should read the so-called *ambiguous characters* in the written prescription of Dr. Didama as standing for ounce. A number of other witnesses testify they should read them as standing for drachm. All the physicians swear that the dose as put up would be very unusual as a medicine, and it appears the plaintiff procured the medicine of the defendant in person, and informed him whom and what it was for.

It appears that atropia is the active principle of a vegetable poison called belladonna, and that in large doses it is fatal to human life.

Now, gentlemen, looking at this written prescription with the so-called ambiguous characters and the context, just as it is; looking at the fact that the defendant knew that this was a first prescription of Dr. Didama's for the defendant, as a remedy for the complaint from which he was suffering; looking at the character of this drug; looking at the degree of skill the defendant ought to possess in view of his responsible calling, did the defendant possess and exercise that degree of skill, care and prudence in reading this prescription and in compounding this medicine which a man of competent skill and extraordinary caution, care and prudence would have used under like circumstances? If he did, then he performed his full duty and no blame can be attached to him, and the action must fall to the ground. It is a case of pure accident which always have happened and always will without any blame attaching to any one. If he did not, and the evil consequences which ensued are the result of a want of such skill, care and prudence in compounding this medicine, then he is liable.

If you find that he is liable, then you will proceed to the question of damage. As before stated, it is conceded that the symptoms which are claimed to have followed immediately upon the administration of this drug did happen, and, therefore, the jury will have no hesitancy in giving the plaintiff such damages as will fairly compensate him for the suffering, pain and distress of mind and body which were the immediate result of the poisonous dose, and the only question for your further consideration will be whether the more or less permanent results which are claimed to have flowed from this poisonous dose, such as inflammation of the stomach, vomiting and partial blindness at times, and partial paralysis of the lower extremities, did in point of fact take place, and if so, whether they are to be attributed to this poisonous dose. On this subject Dr. Moore, a witness for the plaintiff, testified: "It *might* produce lasting results,—from an eighth of a grain I should expect a result continuing from three or four weeks up to a year."

Dr. D. Wheden testified that he treated the plaintiff some time after the poisonous dose was given. "I formed the opinion that something had caused an acute inflammation of the stomach. Poisons are very liable to cause such inflammations. I think an eighth of a grain would be sufficient to account for it. A variety of causes might have produced it."

Dr. William C. Doane, a witness for the plaintiff, testified—"It is regarded as an evanescent poison; we expect no permanent results; I should expect that if a man did not die of belladonna he would recover perfectly. I think all authors agree in this; I would not ascribe inflammation of the stomach to the action of atropia.

All the scientific witnesses sworn on the part of the defendant, including Dr. William Plant, Dr. William Manlius Smith, physician, surgeon and chemist, Dr. Pease and Dr. Didama, substantially agree with Dr. Doane that it is an evanescent poison, and that they would not expect any permanent results.

Dr. Didama testified that what is said in Beck's Medical Jurisprudence about the appearance of inflammation of the stomach, upon a *post mortem* examination after death, by this drug, had been corrected by late writers. These witnesses are of the opinion that poison from atropia is analogous to poison from alcohol, when a man becomes intoxicated. When he becomes sober, he is as well as before. There are no permanent results. It is to be borne in mind that the medical books are not evidence of themselves, except in so far as their statements are borne out by the medical witnesses. It is for the jury to find upon this state of evidence whether,

what are called the more or less permanent results, which are claimed to have been caused by the poisonous dose, are justly attributed thereto or not, and award damages to the plaintiff accordingly.

The plaintiff is not entitled to exemplary damages in a case like this. He is only entitled to such damages as in the sound judgment of the jury shall be a just compensation to the plaintiff for his actual sufferings of body and mind, resulting from the poisonous dose. He is entitled to actual compensatory damages.

There is no evidence of a wilful wrong or of a reckless disregard of duty for which you are at liberty to award damages as a punishment to the defendant. But the damages should be strictly compensatory. Take the case, gentlemen, and decide it according to the evidence.

The jury brought in a verdict for the plaintiff in $450. A request by the defendant's counsel for a new trial was denied by the court; but permission was granted to make and prepare a case of exceptions after entry of judgment.

In presenting this case to the notice of our readers it is not our purpose to discuss the physiological effects of a large dose of atropia; we must leave that to the medical experts. But we desire to direct attention to the commendable position taken by the leading physicians of Syracuse to shield the apothecary who had committed the mistake—not from the legal consequences of his error—but from the imposition of damages largely in excess over those allowed by the law as defined by the learned judge.

Another curious feature and evident injustice, though committed according to the letter of the law, is the exclusion of medical evidence on the part of the attending physician, while laymen and others were by the ruling permitted to testify in regard to effects, which, it must be supposed, could not be interpreted better than by the physician who attended the patient for two months after he had taken the large dose of atropia.

It is very evident that in many parts of the United States the laws referring to liability for negligence or error of judgment, and to expert testimony, are very much in need of being amended.

Pharmaceutical Legislation in the District of Columbia.—A pharmacy law has been passed by Congress, and was approved June 15th, for the regulation of the practice of pharmacy in the District of Columbia, which provides for the appointment of five commissioners, three of whom shall be pharmacists and two physicians. All pharmacists, in business on their own account, and all assistant pharmacists of the district, who prior to the passage of the act, have been engaged in prescription stores, are to be registered, within sixty days, as *registered pharmacists*; all others are to be examined, after having attained the age of 21 years and served in prescription stores not less than four years, or are graduates of some respectable medical school or university, the examination fee being ten dollars. Graduates in pharmacy, of a college of pharmacy that requires a practical experience of not less than four years before granting a diploma, are registered without examination, the fee being three dollars. Rejected candidates may be examined again at the expiration of twelve months without additional charge. Registered pharmacists are responsible for the quality of all medicines, except those sold in original packages; adulterations are subject to a fine of one hundred dollars, and in addition thereto

the name of the person is stricken from the register. Poisons are to be properly labeled, and sold only to persons who are aware of their poisonous character; the sale of poisonous alkaloids, arsenic and others is to be duly registered. Violations are liable to a fine of from twenty-five to one hundred dollars. Itinerant vendors of drugs, nostrums, and medical or surgical appliances, or those, who by printing or any other method publicly profess to cure or treat diseases, etc., are required to pay an annual license of two hundred dollars.

The Commissioners for the next two years are Messrs. W. S. Thompson, Chas. Becker and J. D. O'Donnell, and Drs. J. C. Riley and J. E. Morgan.

The Cinchona Alkaloids.—Dr. O. Hesse, the author of the interesting paper on the subject of which we have given an abstract in the June number, pp. 299–304, has directed our attention to an error which we omitted to correct. In the note on p. 300, Pasteur's "quinidia," should read "cinchonidia," which our readers will please correct. On various occasions since 1869 ("Am. Jour. Phar.," 1869, p. 421), when, we believe, Hesse first proposed the name *conquinia* (conchinin), we have informed our readers that Hesse continues its use, and we may state that it is also employed in the essay above referred to, as it appeared originally in *Berichte d. d. chem. Ges.* Hesse strongly advocates its general adoption, to avoid the confusion resulting from the use of the term quinidia (chinidin) for two entirely distinct alkaloids. In Great Britain and the United States, however, Hesse's *conquinia* is, we believe, invariably designated as *quinidia*.

Berberis repens.—After the paper on p. 373 had been printed we had occasion to examine Lindley's figure of this plant (Botanical Register, plate 1176) which is entirely different from the one given on p. 374. The leaves of the former are nearly orbicular in outline, and have the lowest pair of the leaflets very near the base of the petiole. The leaflets of our plate agree in many respects with Gray's description for *B. aquifolium*; they are, however, not in the least acuminate. It is very likely that the different species may vary to some extent in the characters of their leaves, and we trust that our friends in California and Oregon will enlighten us on this point.

Correction.—On page 323, note 1, line 6, "100 grams" should read 10 grams Epsom salt.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Fownes' Manual of Chemistry, Theoretical and Practical. Revised and corrected by Henry Watts, B.A., F.R.S., etc. A new American from the twelfth English edition. Edited by Robert Bridges, M.D., Professor of Chemistry in the Philadelphia College of Pharmacy. With 177 illustrations. Philadelphia: Henry C. Lea, 1878. 12mo, pp. 1027.

"Fownes' Chemistry" has been for so long a time in the hands of both teachers and students that its merits are well understood and appreciated, and need no further

commendation; and since the present editors of the English as well as of the American edition have acted in that capacity on several previous editions of the same work, they must certainly be regarded as familiar with the wants of those for whom Fownes has been a welcome guide and a reliable authority for consultation. It would seem, therefore, unnecessary to enlarge upon the merits of the work; and when we state that, in our opinion, the present edition in every respect sustains the high reputation which its predecessors have acquired and enjoyed, we express therewith our full belief in its intrinsic value as a text-book and work of reference. We propose merely to briefly notice the changes and to give a very condensed outline of the arrangement of the present edition.

The additions of new matter have been so considerable that it was found advisable in England to issue the work in two volumes, which in the American edition have been compressed into one, through the use of a small but very clear type. It has been found necessary to omit that portion of the previous editions which related to physiological chemistry, including the description of the tissues and fluids of the animal body, and the functions of nutrition and respiration; this necessity will doubtless be regretted by some, but this department of chemistry has become so extensive as to require treatment in separate works.

As heretofore, the manual, after a brief introduction, opens with chemical physics, followed by the chemistry of the non-metallic elements, chemical philosophy, and the chemistry of the metallic elements. The chemistry of the carbon compounds, as might be expected, occupies the greater half of the work. After an introduction embracing special theoretical considerations, the compounds are classified as follows:

The fatty group is divided into hydrocarbons (paraffins, olefin, ethin, etc.) and their immediate derivatives; alcohols and ethers (comprising among the triatomic alcohols glycerin, and among the hexatomic alcohols mannit, the sugars and other carbohydrates); amines, aldehyds, ketones, acids and amides. The other groups are the aromatic group or benzene derivatives (subdivided similar to the preceding; the indigo group; diphenyl group; naphthalene group, and anthracene group. These are followed by the terpenes and camphors, glucosides, bitter principles, coloring matters, alkaloids, pectous substances, bile constituents, gelatinous substances, proteids and brain constituents. An appendix contains a number of valuable tables.

Medicinal Plants; being Descriptions with Original Figures of the Principal Plants employed in Medicine, and an Account of their Properties and Uses. By Robt. Bentley, F.L.S., etc., and Henry Trimen, M.B., F.L.S., etc. Philadelphia: Lindsay & Blakiston, 1878. Price, each part, $2.00.

Parts 29 and 30 contain Amomum melegueta, *Rosc.*; Cassia marilandica, *Lin.*; Cinnamomum camphora, *Nees*; Erigeron heterophyllum, *Mühl.*; Ferula narthex, *Boiss.* (asafœtida of Thibet); Garcinia Hanburii, *Hook.* (gamboge); Guaiacum officinale, *Lin.*; Indigofera tinctoria, *Lin.*; Juniperus sabina, *Lin.*; Pistacia lentiscus, *Lin.* (mastic); Pist. terebinthus, *Lin.* (Chian turpentine); Sassafras officinale, *Lin.*; Styrax benzoin, *Dryander*, and Tylophora asthmatica, *W. and Arn.* (Indian ipecacuanha).

La vanille à la Réunion. Par A. Delteil. Montpellier: Firmin et Cabirou, 1878. 4to, pp. 52.

This is a thesis presented by the author to the Ecole supérieure de Pharmacie de Montpellier, for obtaining the degree of Pharmacien de 1re classe, and treats of the history and botanical relations of vanilla; its culture; the preparation of the fruit; the chemistry of vanilla; its diseases, falsifications, properties and uses, and finally of the pharmacy of vanilla.

This is followed by a short notice of *faham*, Angræcum fragrans, *Dupetit-Thouars*, the leaves and fruit of which contain coumarin. An appendix contains meteorological observations made at the island of Réunion (Bourbon) during the years 1876–77.

As director of the agronomic station of that island, the author enjoyed special facilities for investigating the subject of his thesis.

Kinologische Studiën. Door Dr. J. E. De Vrij.

We are indebted to the author for Nos. 31, 32 and 33 of his "quinological studies," which are reprinted from "Nieuw Tijdschrift voor de Pharmacie in Nederland," and treat of *quinamina*, one of the constituents of East Indian bark of Cinch. succirubra; of *quinetum*, the crude mixed alkaloids as obtained from Indian cinchona; and of Cinch. Hasskarliana.

We acknowledge the receipt of the following pamphlets:

An Outside View of Pharmacy. By Rev. J. M. Manning, D.D. Address delivered at the Third Annual Commencement (1871) of the Massachusetts College of Pharmacy.

The Pith of the Dried Corn Stalk as a Uterine Tent, and General Remarks upon the Use of Uterine Tents in Gynæcological Practice. By W. T. Goldsmith, M.D., Atlanta. From the "Transactions of the Medical Association of Georgia."

Neuralgia and its Modern Therapeusis. By Jas. B. Baird, M.D., Atlanta. From the same publication.

Amputations and Excisions of the Cervix Uteri; their Indications and Methods. By J. Byrne, M.D., Brooklyn, N. Y. From Vol. II of "Gynæcological Transactions," 1878.

Annual Report of the Commissioners of Fairmount Park. Philadelphia, 1878. Pp. 154. Handsomely illustrated.

OBITUARY.

F. J. MALAGUTI died in May, aged 75 years. He was formerly one of the chemists of the porcelain factory at Sèvres and afterwards professor of chemistry at Rennes and rector of the academy in that city. The deceased was well known for his careful and thorough investigations, chiefly in organic chemistry. Several of his papers, of special interest to pharmacists, were published in the earlier volumes of this journal.